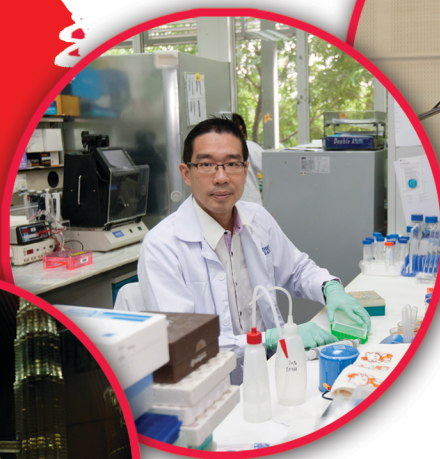


Highlights

ITEX 2013
Award Winning Researchers
Research Highlights
Centres of Excellence
Books@UM





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DEPUTY VICE-CHANCELLOR

This is my third (second in 2013) preface in the UM Research Bulletin. It has been an eventful one year and UM research is going from strength to strength. Several new developments have taken place since my last preface.

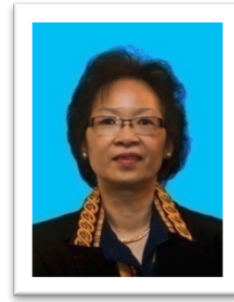
The way we fund research projects has now changed. Multi-disciplinary and trans-disciplinary programmes with a clear focus and which demonstrate mentorship will be given priority in funding over smaller projects. Directed research and development projects to solve real world issues must take priority over “pie-in-the-sky” research. A smaller amount can be left for newly emerging and “blue ocean” projects but even such projects need to be justified in some way. Returns on investment (social or otherwise) as well as researcher accountability must be a permanent guiding principle of the permanent research agenda and culture.

We are also upgrading and enhancing the UM Research website to provide better research information. The new-look website is now operational but this will need to be continuously monitored and improved over time.

We are making a concerted effort to get more of the 45 UM journals indexed in ISI and Scopus. To this end, journals which have a clear plan to get themselves indexed are being given assistance.

More strategies in the next bulletin.

Awg Bulgiba Awg Mahmud



EDITOR, UMRB

Since the last issue, UM has grown in strength in research and innovations as evidenced by the increasing quantity and quality of research output. This is our best ever ITEX results where 14 out of the 16 products exhibited at the ITEX2013 won a gold medal each. We also received the Best Invention Award in the Universities Category.

The *buzzword* on our research agenda is ‘*multidisciplinary/transdisciplinary*’ research programs which promote networking, greater positive impacts on society and increased visibility and citations. Our research clusters are re-structured to achieve this goal. Selected research projects of interest and outputs from the Research Clusters, HiCOE and COE are highlighted in this edition of the bulletin.

Three UM colleagues who have stamped a mark in their excellent research endeavours are highlighted and they are indeed exemplary to our younger colleagues.

I thank all the contributors and members of the UMR Bulletin for their inputs and assistance.

Thong Kwai Lin

ASM Fellows' Lecture 2013 | 2 July 2013 | RMIC



The ASM Fellows' Lecture 2013 –**Professor Dr. Awang Bulgiba Awang Mahmud** giving a lecture on **“The Evolution of Public Healthcare in Malaysia”**



ITEX 2013 | 21- 23 Feb 2013 | KLCC



Win: UM researchers with their medals



Judging day: UM researchers explaining their inventions to the Judges



Interesting: UM researchers explain their project to the visitors

RESULTS FROM ITEX 2013

Researcher(s)	Project Title	Award
Prof. Dr. Jaffar Ali M. Abdullah	Novel Unrivalled Synthetic Protein-Free Embryo Culture Media Product Series for Infertility Treatment in the 21 Century : Product of 15 Years of Research	Best Invention Award (Universities) & GOLD
Prof. Dr. Mohd Hamdi Abd Shukor Prof. Ir. Dr. Ramesh Singh A/L Kuldip Singh Dr. Ahmed AlyDiaa Mohammed Sarhan Dr. Noor Azizi Mardi Mr. Mahdi Sparham	Intelligent Lubrication System in CNC Linear Guide Ways for more Precise Machining and Less Oil Consumption	GOLD
Dr. Ahmed AlyDiaa Mohammed Sarhan (PI) Dr. Farazila bt Yusof Mahyar Afshar Mohajer Ler You Xin Fadzhiruk Ridhzwan Azry Sulaiman Chong Xin Yun	Wheelchair Integrated with Wheelchair-Bound Person Transferring Mechanism	GOLD
Dr. Ching Yern Chee Prof. Dr. Iskandar Idris Yaacob Prof. Ir. Dr. Ramesh Singh	BioAgUV®: A Novel Nanobiocomposite Lacquer for Agriculture Greenhouse Film	GOLD
Dr. Bushroa Abdul Razak Prof. Dr. Mohd Hamdi Abd Shukor Prof. Ir. Dr. Ramesh Singh Assoc. Prof. Dr. Tan Chau Yong Dr. Noor Azizi Mardi	Novel Method in Synthesizing Porous Bovine Calcium Phosphate	GOLD
Dr. Jaya Narayan Sahu N.M Mubarak E.C Abdullah	Synthesis of Novel Magnetic Biochar using Microwave Heating for Arsenic Removal from waste water	GOLD
Assoc. Prof. Dr. Chua Yan Piaw	Building a game to enhance creativity of the players – The Creativity Game	GOLD
Dr. Ching Yern Chee Prof. Dr. Iskandar Idris Yaacob Prof. Ir. Dr. Ramesh Singh	BioAgUV®: A Novel Nanobiocomposite Lacquer for Agriculture Greenhouse Film	GOLD

Researcher(s)	Project Title	Award
Assoc. Prof. Dr. Noor Azuan Abu Osman Hossein Gholizadeh Arezoo Eshraghi Sadeeq Ali	A Novel Eco-Friendly Prosthesis System	GOLD
Dr. Chong Wen Tong Prof. Dr. Masjuki Haji Hassan Prof. Dr. Hsiao Fei-Bin (NCKU, Taiwan) Mr. Poh Sin Chew Dr. Chew Bee Teng Mr. Ahmad Fazlizan Abdullah Mr. Mohammad Reza Hassan Ms. Yip SookParia Mr. Hamid Taheri	Eco-Greeneration Wind-Solar Hybrid Charging Station for Electric Bicycle in Green Cities	GOLD
Dr. Ishenny Mohd Noor Dr. Badrul M. Jan, Dr. Brahim Si Ali, Dr. MasitahHasan, Prof. K.B. Ramachandran, Prof. Dr. Nik Meriam Nik Sulaiman, Prof. Ir. Dr. Mohd Azlan Hussain, Dr. Zahra Jeirani	Method for Lipase production from Palm Oil	GOLD
Assoc. Prof. Dr. Noor Azuan Abu Osman Dr. Ashril Bin Yusuf Vahid Goodarzy	Measurement Tool Box for finding human postural abnormality	GOLD
Prof. Dr. Rosna Mat Taha Ms. Jamilah Syafawati Yaacob Aziemah Abdul Manan Norlina Rawi Ms. Sakinah Abdullah Ms. Sharifah Nurashikin Wafa Syed Mohd Thalal Wafa	In vitro flowering for production of of floral handicraft and mini mini garden	GOLD
Prof. Saw Aik Dr. Chua Yeok Pin Dr. Roshan Gunalan Ms. Norfazlin Rasidi	Modular support frame for hip spica application	GOLD
Dr. Lim Chin Hong Dr. Chong Hwa Kian Dr. Chong Wu Yi Prof. Harith Ahmad	3D Optical Settlement Sensors	SILVER
Prof. Dr. Ramesh T. Subramaniam Dr. Ramesh Kasi MS. R. Shanti Rajantharan Mr. Ng Hon Ming Mr. Mohd Zieauddin Kufian Prof. Dr. Abdul Kariem Arof Dr. Ezra Morris Abraham Gnanamuthu Dr. Chee Swee Yong	Green Plasticized Acrylate Copolymer Electrolyte with Excellent Adhesion for Electrochemical Applications.	SILVER

FRGS Talk | 21- 23 Feb 2013 | RMIC



The Panelist for the FRGS Talk



The FRGS Talk was organised to help UM researchers in writing effective and winning research proposals for FRGS application.



Interactive: Q & A Session

UM HIR NEWS (19 June 2013)

On 11 June 2013, The Star newspaper carried the story that five varsities in Malaysia made it into the top 100 2013 QS University Rankings (Asia). This is indeed welcome news, especially for UM which was ranked 33 out of 469 Asian universities, followed by Universiti Kebangsaan Malaysia at 57, Universiti Sains Malaysia at 61, Universiti Teknologi Malaysia at 68 and Universiti Putra Malaysia at 72.

According to QS head of research, Ben Sowter, the results are positive for Malaysia, as all the five research universities had improved their rankings from the previous year (Table 1). The ranking method had not changed from 2012 and was based on, among other relevant criteria, academic reputation, student/faculty ratio, papers per faculty, citations per paper, internationalization as well as inbound and outbound student exchange. According to Mr. Sowter, four of the Malaysian universities ranked among the top 10 Asean institutions, more than any other countries. "This means Malaysian universities are keeping pace with the rivals in one of the most competitive and dynamic regions in the world", he elaborated.



UM Vice-Chancellor, Tan Sri Dr. Ghauth Jasmon

He said that the introduction of the UM Standard Performance Targets and the new criteria for key performance indicators and promotions, which placed great emphasis on ISI-indexed journals and high impact and reputable international publications, have seen UM taking the lead in this regard. Tan Sri VC said, "Looking closer at the key indicators of the ranking, I am pleased that UM leads in academic reputation, employer reputation and inbound exchange students amongst local universities and beating many regional universities too. In faculty areas, our Arts and Humanities, Life Sciences and Medicine, Social Sciences and Management ranked first in the country".

Malaysia cannot afford to be complacent as other regional universities are also on the match for better university rankings. We are still a long way behind universities in Japan, China, Hong Kong, Korea, and Singapore.

UM can rise further if we manage to meet our KPI under the UM HIR MoHE funding. It is now very much up to our HIR PIs to deliver on their promise, especially publications in top Tier 1 ISI journals such as Nature and Science (Table 2).

Universities	2013 rank	2012 rank
UM	33	35
UKM	57	58
USM	61	63
UTM	68	75
UPM	72	76

Table 1: QS World University Rankings

Our Vice-Chancellor, Tan Sri Dr. Ghauth Jasmon, was elated with the continued rise of UM in the rankings. "UM scored distinctions in all criteria, except for citations and papers per staff which take time to build up. The improvement over the past four years was due to the university's strong drive for high impact research," he said. Deputy Education Minister, Datuk Mary Yap, in congratulating the universities, says that the National Higher Education Strategic Plan is an important document which sets the path of excellence for the institutions. "I believe the universities' success in the rankings is a result of the proper implementation of the strategic plan," she said.

In order for Malaysian universities to improve their ranking, there is a need to increase on the number of papers published in influential international journals. Tan Sri VC is aware of this and said that UM is committed to improve both the quantity and quality of its publications.

JOURNAL	2012	2013	2014	2015	TOTAL
Nature	1	2	4	5	19
Science	1	1	3	0	5
Lancet	0	0	0	1	1
PNAS	0	2	3	3	8
TOTAL	2	5	10	9	33

Table 2: Targeting High Impact Publications By HIR MoHE PIs

ITEX 2013 Best Invention Award Winner- Synthetic Protein-Free Embryo Culture Medium (PFM)

The invention, **Synthetic Protein-Free Embryo Culture Medium (PFM)** invented by Professor Dr. Jaffar Ali bin M. Abdullah of the Department of Obstetrics and Gynecology, Faculty of Medicine won the **Gold Medal** and **Best Invention Award** (under the Universities category) at the ITEX 2013 recently.

The PFM took about 20 years of relentless research to formulate, beginning in 1985 through 2005. It is the only one of its kind. This invention has been licensed for commercial exploitation to Cellcura ASA of Norway (www.cellcura.com). The PFM has also won 3 international awards and 3 regional awards making the number of awards to a total of 7.

What is the PFM? It is a nutrient solution (embryo culture medium or ECM) used to grow embryos in laboratory dishes in the **test tube baby program** for the treatment of infertility.



Advantages: (i) Eliminates disease transmission to patients, their babies and healthcare workers. All current ECM contain donor serum proteins that carries risk of disease transmission (**hepatitis, HIV, mad cow disease, etc**); (ii) Since it is completely synthetic there is no batch to batch variation in the quality of the medium and thus the quality of embryos generated are not affected by batch variation which is a common issue with present-day embryo culture medium containing proteins; (iii) Cost of production reduced by about 30%; (iv) longer shelf life and storage advantages of about 4 months and 2 years respectively as opposed to 6 weeks of shelf life and storage for the conventional protein-containing culture medium; (v) logistical advantages include the ability to transport the medium in a frozen state which is not possible with protein-containing medium. The latter can be frozen without compromising quality; (vi) Superior quality: Quality of embryos generated in PFM and the clinical pregnancy rate are often equal to or statistically **better** than protein-containing media. The **Synthetic protein-free embryo culture medium** is a unique formulation and a revolutionary product, a solution to above problem. It stands out as a completely different formulation to present-day protein-containing embryo culture media.

Other advantages include: The only halal product of its kind world. **Halal status:** This product is considered Halal because it is synthetic and devoid of any animal, human or biologic components. **Halal certification** has been initiated through the European Union Halal Authority based in Belgium where the protein-free medium is custom-manufactured by a European manufacturer.

Conventional protein-containing embryo culture medium contains serum proteins obtained from European and American donors and thus may be considered non-halal by Muslims. In the past thirty years, Muslims had no choice but to use the non-halal embryo culture medium to generate embryos of muslim patients. Now Muslims have a choice. While it was permissible to use products of questionable halal status in the past, Muslim may now use the synthetic medium without worrying about the halal status of the product. With the availability of the Synthetic Protein-free Embryo Culture Medium **Muslims Worldwide Are No Longer Forced To Use Unclean Embryo Culture Media**. Other religious and beliefs such as the Jews, Caste Hindus, and Adventist Christians will also benefit from this product.

There are some segments of the society in the world that are averse to the use of supposedly “unclean donor serum products” for the generation of human embryos. These people can now take comfort in the availability of a completely synthetic and therefore “clean” embryo culture medium.

The protein-free medium has now been patented and protected worldwide in many countries through a patent cooperation treaty (PCT). Countries where the protein-free media has been protected include Norway and Russia. It has also been approved in USA, European Union, Israel, Australia, Singapore, OAPI (French speaking African countries totaling about 49 countries. Other countries are yet to respond to the PCT application.

The main application of the protein-free culture medium is in the assisted reproduction treatment (test tube baby) program. This product has the capability to impact 1 in 6 couples worldwide since one in 6 couples experience infertility or some form of sub-fertility for which assisted reproduction treatment is required.

Other application: Meat and dairy industries; transplantation medicine, stem cell therapy and vaccine production. **Market value** for all above applications is estimated at more than **USD\$150 billion** by year 2014.



Only “Halal” Product in the market

- Completely synthetic
- High margin/Lower cost
- Manufacturing & Logistics advantages
- Risk elimination (of blood borne disease)

Inventors

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Professor Dr. Chua Kek Heng

Professor Dr. Chua Kek Heng

hails from Johor. He obtained his first degree in Microbiology, MSc in Plant virology and PhD in Biotechnology from University of Malaya. Currently he is a lecturer in Department of Biomedical Science, Faculty of Medicine, University of Malaya. His research areas include various disease polymorphism studies, mutation investigation studies, characterization of bacterial virulence factors and diagnostic kit development.



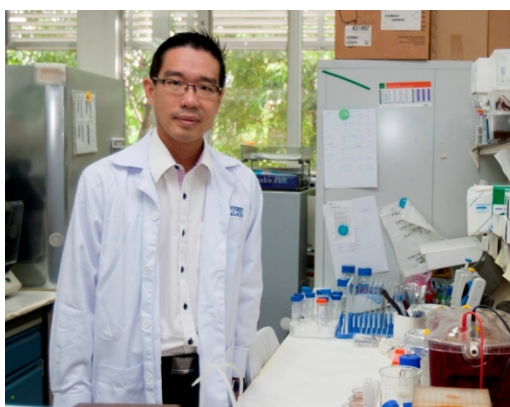
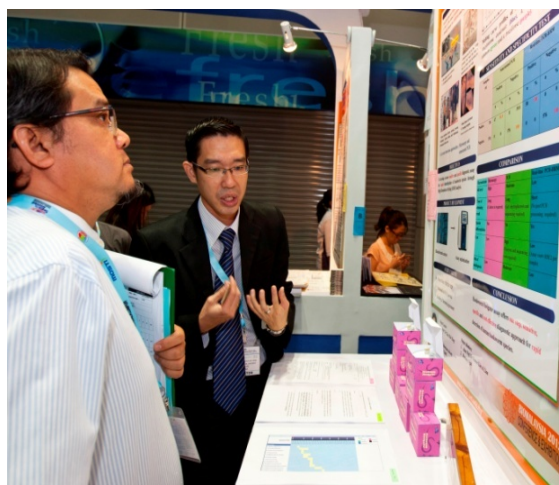
Professor Dr. Chua Kek Heng

Professor Chua has attained outstanding achievements in terms of publications, intellectual property rights and patents. His commitment and relentless hard work has led to 80 high quality publications during the 9 years of his employment in UM. His contributions in science and technology are not only limited to novel scientific innovations but also allow further understanding between human disease and their association with various genetic factors and microorganisms. On a personal note, Professor Chua has a pleasant disposition and gets along very well with his fellow academics and staff. He is also modest and always willing to assist younger and “inexperience” staff to achieve higher goals. Professor Chua is an outstanding experienced scientist as he does not concentrate on his own achievements, but he “builds” leaders. He makes it his duty to prepare and train his younger staff, colleagues and students to carry on his research.

Professor Chua’s commitment to the study of genotyping of diseases has resulted in the successful mapping of important disease predisposing markers for systemic lupus erythematosus, Crohn’s disease and retinopathy in the Malaysian population. The frequencies and distributions of those polymorphisms or mutations in the three main ethnic groups in Malaysia are vital in disease development prediction and allow early preventive measures. The innovative approaches, tests and kits will allow more cost effective, rapid, sensitive and specific detection and confirmation of human diseases. His efforts have been recognised at the national and international levels as he currently holds 15 national and 7 international patents. A diagnostic kit for malaria (PlasmoNex™) was developed by Professor Chua. It has been successfully commercialised in 2011. The PlasmoNex™ is the world’s first PCR based malaria detection system which is able to detect all 5 different species of plasmodium (malaria parasites) in a single PCR assay. The current products in the market involves 2 continuous PCR reactions (nested PCR) for the detection process and capable of detecting up to only 4 different plasmodium species. Thus, PlasmoNex™ offers more speedy and precise diagnosis for malaria in affected individuals. Professor Chua believes PlasmoNex™ will result in more effective confirmation of the disease in many parts of the world where malaria is highly prevalent.

Professor Chua has contributed much to the transfer of scientific knowledge in his capacity as a committee/panel member for the evaluation of numerous internal and external grants/projects, namely Science Fund, FRGS, UMRG, PPP and ERGS. He is also actively involved in organizing national/international workshops to introduce up-to-date technologies to young Malaysian researches and to train young scientists in molecular “bench” skills. To date, he has delivered more than a hundred presentations in various seminars, expositions and conferences. At an international level, he has been a reviewer for many ISI (WOS) publications.

Professor Chua has also been selected to represent the University of Malaya in various major national and international exhibitions/competitions such as Bio-Malaysia, International Invention, Innovation and Technology exhibition (ITEX), International Exposition of Research and Invention of Institutions of Higher Learning (PECIPTA), USA Invention New Product Exposition (INPEX), Nuremberg International Invention Fair (IENA), Germany, Biotechnology Asia Expo, International Exhibition of Inventions, New Technology & Products, Geneva, Switzerland and the Seoul International Invention Fair (SIIF), Korea. He has been awarded with more than 80 prestigious scientific recognitions for his perseverance in research and for his excellent research innovations including the 2 most recent awards ie: World Halal Week Excellence Innovation Award 2013 and National Intellectual Property Award 2013. Overall, Professor Chua’s contributions to both the scientific community and to society are highly commendable.



Diffuser Augmented Dual-Rotor Energy Recovery Wind Turbine Generator

By: Engr. Dr. Chong Wen Tong



Introduction

An on-site clean energy generator from unnatural wind resources - Diffuser Augmented Dual Rotor Energy Recovery Wind Turbine Generator is installed above an exhaust air system outlet to harness discharged air for electricity generation. Two vertical axis wind turbines are positioned at a specific position at the cooling tower outlet to avoid a negative impact on the performance of the cooling tower. This system utilizes the advantages of discharged air which is predictable and strong. The integration of the enclosure can improve the performance of the wind turbine and act as a safety cover to protect the entire system from endangering the public. It is designed with several guide-vanes positioned at the up-stream side of the wind turbine to create a venturi-effect and guide the wind before it interacts with the turbine blades. Moreover, the enclosure design is comprised of diffuser-plates that can draw more wind and accelerate the flow. Laboratory test conducted on a scaled model shows no measureable difference in the air intake speed and current consumption of the power-driven fan when the turbine was spinning above the cooling tower. Field test on an actual induced-draft cooling tower shows no significant difference on the outlet air speed of the cooling tower. This system is retrofit-able to existing cooling towers and the electricity generated from this system can be utilized for commercial purposes or fed into the electricity grid.

Experimental Results

Field Testing at cooling tower manufacturer, TRUWATER	Cooling Tower without VAWT	Cooling Tower with VAWT
Power consumption (cooling tower)	7.0 ~ 7.1 kW	
Intake air flow rate (average)	33.09 m ³ /s	33.19 m ³ /s
Discharge air velocity (average)	10.63 m/s	10.67 m/s
Wind Turbine RPM	-	881 rpm

Advantages

- Very high market potential due to abundant unnatural wind sources
- Improve starting behavior of VAWT
- Reduce the exhaust air re-entrainment and circulation so that the exhaust air will not be sucked back into the air intake.
- Retrofit-able to the existing cooling towers and exhaust air sources
- Improve wind turbine efficiency by guide vanes and diffusers
- Reduce installation and maintenance worker hazards
- Effective and predictable energy recovery system
- Capture waste energy from exhaust air systems
- Continuous operation of wind turbine
- On-site clean energy generation
- Minimum RPM fluctuation
- Fast payback period

Novelty

A new invention on harvesting unnatural wind resources by using 2 vertical axis wind turbine (in cross wind orientation) integrated with an enclosure that act as a diffuser to create a venturi effect and guide the wind to optimum angle before interacting with wind turbine blades. Safety concern due to blade failures or maintenance activities are tackled with the design of enclosure.

Acknowledgement

Project members would like to thank University of Malaya for the assistance provided in patent application of this design and the research grant (RG039-09AET) allocated to further develop this design. Sincere gratitude is also dedicated to the Malaysian Ministry of Higher Education (MOHE) for the Prototype Development Research Grant Scheme (PR002-2012A) awarded to this project. Special appreciation is credited to the Truwater Cooling Towers Sdn. Bhd. for providing relevant information and facilities for field testing.

Awards

2011

- 1.Malaysia Technology Expo (MTE) 2011 - **Gold Medal**
- 2.ITEX 2011 – **Gold Medal**
- 3.Patent Competition organized by WIPO, KIPO and MyIPO - **Certificate of Merit (Best 15 patents from Malaysia)**

2012

- 1.Malaysia Technology Expo (MTE) 2012 - **Gold Medal**
- 2.Korea Invention Promotion Association (KIPA) 2012 - **Special Prize**
- 3.International Trade Fair (iENA 2012), Nuremberg, Germany – **Gold Medal**
- 4.International Symposium on Green Manufacturing and Applications (ISGMA 2012), Jeju, Korea – **Best Paper Award**

Related publications

- Early development of an energy recovery wind turbine generator for exhaust air system. *Applied Energy*, 2013 (In press).
- Exhaust air energy recovery system for electrical power generation in future green cities. *International Journal of Precision Engineering and Manufacturing*, 2013 (In Press).
- Performance investigation of a power augmented vertical axis wind turbine for urban high-rise application. *Renewable Energy*, 2013,51 (388-97).

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Probing Nano and Electronics Structures of Low-dimensional Semiconducting Material

By: Prof. Dr. Wan Haliza Binti Abd Majid

The molecular structure of organic semiconducting materials and composition of inorganic semiconducting nanocrystallites/ nanowires can be systematically changed in order to study its influence on self-organization, crystallinity and packing of the materials. Interfacial electronic behavior between semiconducting materials and electrodes or another semiconducting material is one of the research objectives of this project that has been investigated. The influence of distribution of metallic nanoparticles on the substrate on Plasmon Resonance Frequency and change of refractive index of the chemical composition ratio of SiO_x by Plasma Vapor Chemical deposition condition is also one of our primary interests.

Besides using the fabrication and characterization facilities such as Transmission Electron Spectroscopy (TEM), Scanning Electron Spectroscopy and Atomic Force Microscopy in order to characterize the nanostructure that are available in Low Dimensional Materials Research Center (LDMRC), Physics Department, Chemistry Department and Institute of Biological Science, Small angle X-ray Diffraction and X-Ray Photoelectron Spectroscopy are two essential tools to study the distribution of metallic nano particles and the chemical composition of the underlying substrate, respectively. A collaboration ties with Synchrotron Light Research Institute (SLRI), Karat, Thailand has been established to facilitate our research group with the experimental tools. As a result of the collaboration, three trips to SLRI have been successfully planned and executed.

Research Collaboration with SLRI

Three trips were scheduled on 16th April-1st May 2012, 13th -29th October 2012 and 20th April-3rd May 2013. For the second trip, nine researchers including 2 lecturers, 1 research fellow, 2 PhD students and 4 master students were given the opportunity to use the X-Ray Photoelectron Spectroscopy (XPS) and Small angle X-Ray Scattering (SANS) facilities in Synchrotron Light Research Institute (SLRI) Korat, Thailand.

The researchers were divided into 2 teams; the XPS and SAXS team. For the XPS measurement, the scheduled beam time started from 15th to 28th October. The beam time for SAXS measurement started from 20th to 29th October 2012. The experiments on the 13th October 2012 which was scheduled for the XPS team consisted of 5 researchers. The Siam Photon Source (SPS) is an electron accelerator complex consisting of a 40 MeV linear accelerator (LINAC), a 1 GeV booster synchrotron (SYN) and a 1.2 GeV electron storage ring (STR).

The electrons are produced by a thermionic electron gun. These electrons are then accelerated by 2856 MHz high power microwave in the linear accelerator. The 40 MeV electrons are transported by the low energy beam transport line (LBT) to the booster synchrotron and accelerated to 1 GeV by 118 MHz Radio Frequency wave in the RF cavity of the booster synchrotron. The 1 GeV electrons are transported by the high energy beam transport line (HBT) to the storage ring and further accelerated to 1.2 GeV.

Projects involved:

Project 1: “The Measurement of Electronic Energy Levels of OLED Component Materials” using beam line 3.2a Photo Electron Spectroscopy (PES) at Synchrotron Light Research Institute (SLRI) from 16th April-1st May 2012.

Project 2: “The Measurement of Electronic Energy Levels at the Interface of Organic Semiconductors” using beam line 3.2a Photo Electron Spectroscopy (PES) at Synchrotron Light Research Institute (SLRI) from 13th -29th October 2012 and 20th April-3rd of May 2013.

Project 3: “The Measurement of Reduction Degrees of Graphene Oxide by using Hydrogen Plasma Treatment” using beam line 3.2a Photo Electron Spectroscopy (PES) at Synchrotron Light Research Institute (SLRI) from 16th April-1st May 2012.

Project 4: “The study of Organic and Polymer Semiconductor based devices using SAXS, WAXS and GISAXS” using beam line 2.2 Small Angle X-ray Scattering (SAXS) at Synchrotron Light Research Institute (SLRI) from 20th -29th October 2012 and 20th April-3rd May 2013

Project 5: “The investigation of molecular dynamics of thermotropic branched chain glycolipids” using dielectric spectroscopy and temperature modulated Small Angle X-ray diffraction using beam line 2.2 Small Angle X-ray Scattering (SAXS) at Synchrotron Light Research Institute (SLRI) from 20th April-3rd May 2013.

The work function (WF) of chlorine functionalized indium-tin oxide (ITO) and fluorine functionalized ITO using UPS (shown in Figure 1) have been successfully measured at SLRI. It was found that by varying the conditions under which the chlorine and fluorine were attached to the surface of the ITO, i.e. the concentration of the dichlorobenzene (DCB) and cesium fluoride (CsF) solution and whether the samples were exposed to UV light or baked in an oven, the work function of the sample could be changed at will. It was also discovered that the F-ITO produced a higher work function than Cl-ITO and this happened when the sample was immersed in the weakest concentration of CsF and then baked as can be seen in Figure 2.

We have successfully mapped the energy levels at the interface of ITO and two other materials: Poly (9-vinylcarbazole) (PVK) and poly (3,4-ethylenedioxythiophene) poly (styrenesulfonate) (PEDOT:PSS). Some of the phenomena encountered include Highest Occupied Molecular Orbital (HOMO) band-bending and interfacial dipoles.

Related Publications:

Manuscripts on our findings have been submitted to the Applied Surface Science, Applied Physics Letter and Journal of Applied Physics for review.

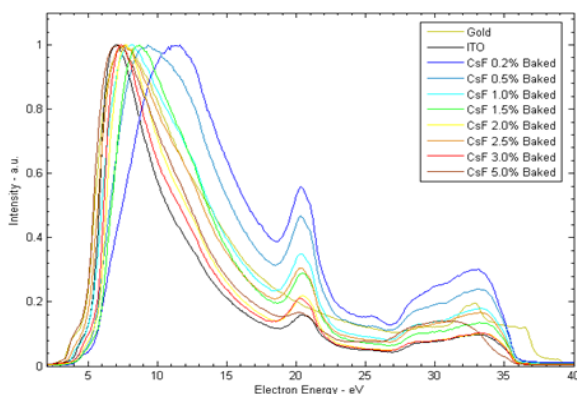


Figure 1: Normalized ultraviolet photoelectron spectra showing of the fluorinated indium tin oxide functionalized with varying concentrations of cesium fluoride along with gold.

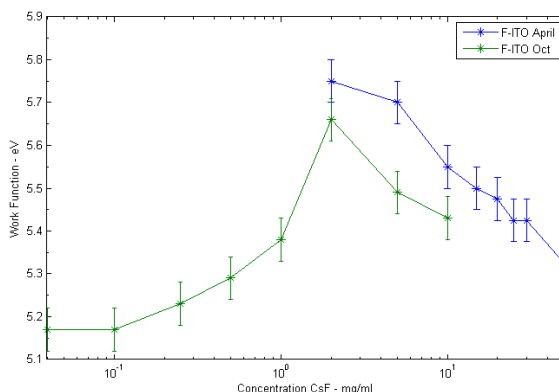


Figure 2: The work function of fluorinated indium tin oxide as a function of the concentration of the cesium fluoride solution used in the fictionalization process.

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Disabilities, Opportunities through Internetworking and Technology

By: Associate Prof. Dr. Loh Sau Cheong

Introduction

The Disabilities, Opportunities through Internetworking and Technology project or better known as DO-IT Malaysia, is a project funded by the Fundamental Research Grant Scheme (FRGS) since 2011.

This project is led by Associate Professor Dr. Loh Sau Cheong from the Faculty of Education, University of Malaya. This project serves to increase the successful participation of high functioning individuals with disabilities in challenging academic programmes. Key aspects of the DO-IT Malaysia Scholars programme includes: Holiday Programme, Internetworking, Mentoring and Peer Support, as well as Work-Based Learning.

The objectives of the project are as follow:

- To develop a youth transitional support programme for high functioning Malaysian students with special needs;
- To conduct an in-person and online peer and mentor support;
- To provide access to computers and assistive technology
- To advocate in internships and other work-based learning

Report On Recent Activity: Holiday Camp II

The recently held DO-IT Malaysia Holiday Camp II is one of the important programmes of the DO-IT Malaysia Scholar Programme. This camp, which was held from 26 to 30 May 2013 in the University of Malaya campus was the second camp that came along following the Holiday Camp I which was held from 11 to 16 November 2012.

The purpose of the Holiday Camp II is to provide an opportunity for high functioning teens to master various skills in life.

The objectives for Holiday Camp II are: (i) To enable the participants to experience campus life; (ii) To enable the participants to live an independent life; (iii) To enable the participants to accept and take care of friends with different category of special needs; (iv) To enable the participants to learn to accept changes in life; (v) To enable participants to master technological skills; (vi) To enable the participants to practice decision making; and (vii) To prepare the participants for the working world.

Eleven students had participated in the Holiday Camp II, of which seven of them were hearing impaired, two of them were visually impaired and two had learning disabilities. All of them participated in the campus activities such as attending lecture, fire drill, outside exercise, movie viewing, attending talks and workshops, applying technological skills, field visit, birthday celebrations as well as journal writing.

Discussion

Successful transition from school to work is a major goal in the education of students with disabilities. Sabbatino and Macrine (2007) explain that students with disabilities who are not supported in their transition and are not equipped with important skills for employment will not be able to cope with the transition into employment and become productive citizens of the country.



DO-IT Malaysia Scholars attending Power Point Workshop

DO-IT Malaysia Scholars engaged in iPad workshop



Workshop on 'Understand Myself'



Visit to art gallery of United Voice

These activities are very important to achieve transition goals which have been incorporated into the DO-IT programme conducted by the University of Washington (Burgstahler, 2003).

Conclusion

As there is a huge population of individuals with disabilities requiring access to post secondary education and employment, more resources and attention should be given to meet their challenges and needs.

Related Publication

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- Burgstahler, S. (2003). The role of technology in preparing youth with disabilities for postsecondary education and employment. *Journal of Special Education Technology*, 18(4), 7-19.
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- Kirsch, N.L., Shenton, M., Spirl, E., Rowan, J., Simpson, R., Schreckenghost, D., & LoPresti, E. F. (2004). Web-based assistive technology interventions for cognitive impairments after traumatic brain injury: A selective review and two case studies. *Rehabilitation Psychology*, 49(3), 200-212.

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Scholarship In Action: University of Malaya's CLMV Outreach Programme

By: Prof. Dr. Azirah Hashim

Introduction

The CLMV programme is one such endeavour of the Ministry of Higher Education Malaysia to reach out to the ASEAN countries, Cambodia, Laos, Myanmar and Vietnam (CLMV). Under this initiative, the University of Malaya is spearheading a multidisciplinary research programme which focuses on Cambodia with hopes of extending the research and activities to the rest of the CLMV countries.

This Cambodian project comes under the initiative for ASEAN Integration i.e. IAI Work Plan II, 2009-2015 (The Association of Southeast Asian Nations, n.d.) and the national higher education plan i.e. the PSPTN Phase II, 2011-2015 Malaysia's Global Reach: A New Dimension (Ministry of Higher Education Malaysia, 2011). The aims of the PSPTN Phase 2 strategic plans are, firstly, to promote Malaysia as a donor for the community in developing countries through education, research and capacity building; secondly, to further enhance Malaysia as an education hub in the region; thirdly, to internationalize Malaysia's education and lastly, to increase university exchange programmes or training programmes for certain skills needed by CLMV countries.

Seven work packages were set up which have as their aims: to identify the demands accompanying globalisation and development in the region and its impact on Cambodia as well as to examine the policies and measures undertaken by Cambodia in developing the education and development programmes in the country.

The specific objectives of the seven projects are as follows:

- To promote energy education and develop rural electrification in Cambodia by exploring alternate sources of energy.
- To improve ICT resource reusability and sustainability. To investigate the sustainable and green development strategies and policies in Cambodia in response to global environmental issues and to suggest the most relevant policies to be given priority by related players. To determine the most pragmatic approach to be adopted by Cambodia to ensure that state-owned enterprises (SOEs) perform better as business entities to promote economic growth.
- To determine immunological characterization and surveillance of chlamydial sexually transmitted disease in females of reproductive age.
- To determine immunological characterization and surveillance of chlamydial sexually transmitted disease in females of reproductive age.

•To determine measures and strategies to be undertaken for school and tertiary education system development in Cambodia.

•To assess the oral health of the Cambodian population in terms of the prevalence of oral diseases and its associated risk factors.

This project can be seen as an outreach programme which encourages community empowerment and development and contributes towards improving lives through knowledge sharing, skill development and participation (MyCommunity).

It also helps facilitate global engagement between local and international partners and experts as well as the sharing and exchanging of knowledge and expertise to cultivate a talent pool for this type of engagement (MyExpert).

Activities and Achievements

The project has helped to develop good rapport building and networking between the two countries between government officials, International prestigious Universities and key Cambodian Institutions.



MOU Signing between UM and USEA (13 January 2012) @UM

A number of training sessions have been conducted both in Phnom Penh and Kuala Lumpur with the arrangements of groups of Cambodians coming to UM or trainers and facilitators going to Phnom Penh. These workshops included education-based teaching and research seminars, training on examination of women's health and early detection of oral problems, IT training talks and training sessions, writing grant proposals for funding and research article writing and publication in peer-reviewed journals.

In addition, book donations and help in the digitization of resources into electronic format were given to the National Library Phnom Penh organised by the ICT team in 2012. Two groups of Cambodians were also invited to UM to attend briefings and hands-on sessions in the library and the IT centre.

These efforts hopefully contribute to the image of UM and Malaysia as a hub for quality education and research opportunities.

In terms of student mobility, a team of undergraduates from a private university in Phnom Penh were given the opportunity to visit UM and its medical and dental laboratories/clinics.

The activities, research and outputs that are derived from this project are indeed valuable in fostering collaboration between Malaysia and Cambodia and in line and contributory to the aims, mission and vision of the ASEAN Charter for 2015.

Prospects For the Future

More of such projects should be developed at UM in its endeavour to promote research which involves for eg. the integration of the sciences and humanities, area studies and the translation functions of the humanities, medicine and sciences.

Our Cambodian experience will hopefully further stimulate further research into other CLMV and ASEAN countries as well as develop a framework for carrying out other multidisciplinary initiatives.

Related Publications

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•Ministry of Higher Education Malaysia. (2011). National Higher Education Strategic Plan 2 – Malaysia's Global Reach: A New Dimension. Malaysia: Perpustakaan Negara Malaysia.

•The Association of Southeast Asian Nations. (n.d.). Initiatives for ASEAN Integration (IAI) Work Plan II, 2009-2015. Retrieved 8 November 2012, from <http://www.aseansec.org/22325.pdf>



CCNA3 and 4 Instructor Training (26 Oct – 01 Nov 2011) at the Sunrise Institute of Technology, Phnom Penh, Cambodia

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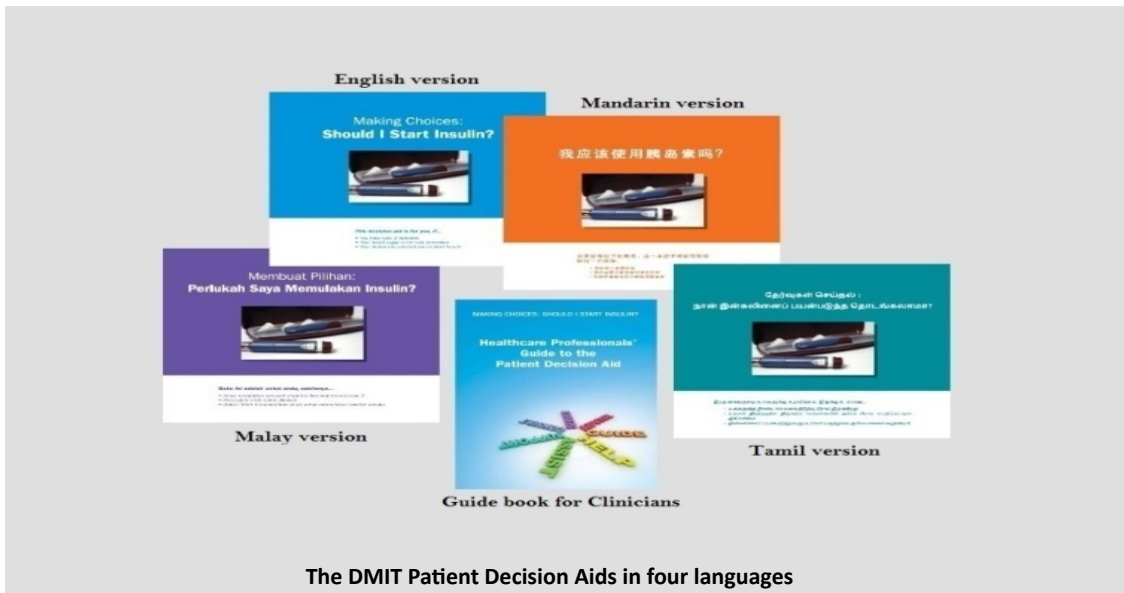
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The DMIT Project: An Unexpected Journey

By: Prof. Dr. Ng Chirk Jenn



The DMIT Patient Decision Aids in four languages

The DMIT stands for ‘**Decision Making on Insulin Therapy**’. This research study was aimed to develop and pilot test an innovative approach to support patients with type 2 diabetes who have been advised by their doctors to start insulin. The intervention is a Patient Decision Aid (PDA) which is used to support patients in making difficult healthcare decisions. Although many patient decision aids have been developed across the world, few focus on diabetes and insulin. The DMIT insulin patient decision aid is the first PDA developed in Malaysia.

The DMIT insulin PDA was developed based on the UK Medical Research Council framework on development and evaluation of complex interventions .

This framework proposes that healthcare interventions that involve behavioural change and education are complex as there are many components within one intervention. This requires a systematic approach to ensure that the intervention is effective and implementable in the real world.

Therefore, the DMIT intervention was developed based on:

- needs assessment study
- decision support theory (Ottawa Decision Support Framework)
- systematic review of literature
- acceptability and feasibility pilot study

Project Flow

The DMIT study used a mixed methods approach to develop and pilot test the insulin PDA and it was carried out in three stages:

Stage 1 involved a needs assessment study where we interviewed patients (n=21), doctors, nurses, pharmacists and policy makers (n=42) using focus groups and individual interviews.

Stage 2 focused on developing the insulin PDA using findings from the needs assessment study, a systematic review and a decision support conceptual framework. An expert panel comprising key stakeholders was convened to advise on the development and evaluation of the PDA.

The International Patient Decision Aid Standards (IPDAS) <http://ipdas.ohri.ca> guided the content and format of the PDA and ensure that the PDA has achieved international standards. The DMIT insulin PDA has been registered with the Decision Aid Library Inventory:

<http://decisionaid.ohri.ca/cochinvent.php>

In *Stage 3*, we pilot tested the PDA by conducting training workshops for the clinicians and asking them to use it with their patients in real consultations. Both the patients and healthcare professionals answered a questionnaire before and after the intervention and they were also interviewed on the feasibility and acceptability of using the PDA.

This study was conducted in the government health clinics, private general practice clinics and the University of Malaya Medical Centre across three States (Kuala Lumpur, Selangor and Negeri Sembilan) between 2012 – 2013.

Findings

During the *Stage 1* exploratory study, we found that:

- Patients were concerned about insulin therapy not only because of the side effects (pain, injection, hypoglycaemia), they were also worried about whether insulin was ‘halal’, caused kidney problems (misconception), and interfered with their daily routine.
- Healthcare professionals tended to persuade or threaten the patients using ‘scare’ tactics rather than supporting them in making decisions. They would focus on the benefits rather than the side effects on the treatment.
- Both patients and healthcare professionals wanted to have a tool to help them (or their patients) to make a decision.

During *Stage 2* (development phase), the PDA was developed using an iterative approach where the research team drafted the PDA, presented it and getting feedback from to the expert panel (which included patients, healthcare professionals and policy makers), revising the PDA, and repeating the cycle until no further changes were made (reach ‘saturation point’).

In *Stage 3* pilot study, we found that:

- Generally, the patients found the PDA acceptable and user-friendly. They used it as a way to communicate their concerns to the healthcare professionals and their family. However, they prefer the PDA to have more pictures and fewer words.
- The healthcare professionals used it as a supplement to their consultations. Those who were more experienced found it less useful because they already had a ‘formula’ to support the patients. However, those who were less experiences found it helpful as a ‘safety net’ to ensure that they have covered the key areas that they should discuss with the patients.

Output

We managed to achieve the following output from the DMIT project:

- Publications: 5 full publications in ISI journals (tier 2) and 16 abstracts
- Research awards: 1 at national and 3 at regional conferences
- Patient decision aids in four languages (paper-based, iPad application)
- Healthcare professional training package (including an electronic learning module – in progress)
- Postgraduate students: 1 PhD and 1 MMedScience students

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Biotechnology for Agriculture

By: Prof. Dr. Jennifer A. Harikrishna

Biotechnology for Agriculture started life as a smaller project titled “**Sustainable and Inclusive Innovation in Agricultural Biotechnology: A pilot project to determine the potential for reverse engineering of molecular tools for supporting agriculture for the Orang Asli of Peninsular Malaysia**” in late 2012. The program incorporates the earlier project and an additional project.

The aims of the program are to:

- Engage with an economically disadvantaged local community to identify needs and to discuss issues related to implementation of Ag Biotech. Design new strategies for making model Ag Biotechnologies accessible, affordable and sustainable.
- Determine the status of agriculture in Peninsular Malaysia in terms of identification of key targets for future planning of sustainable inclusive innovation for agriculture.
- Provide supporting molecular biology and plant biosafety facilities for members involved in this and other programs.

The program was conceived with the recognition that there is an urgent need to address sustainable agriculture. While biotechnology cannot solve all of the issues, it can be harnessed to support and develop agriculture (plant, animal and microbes) for innovative and high quality products, not limited to, but including food. Sustainable inclusive innovation aims to engage the most economically disadvantaged in society in sustainable development, using innovative approaches. The results should be sustainable economically, socially and environmentally. The current program aims to develop this approach to agriculture in Peninsular Malaysia through a pilot project involving selected Orang Asli communities, together with state of the art molecular biology technology at the University of Malaya and will determine some optimal approaches for sustainable agriculture among economically disadvantaged groups in the country.

The approach for this program includes “reverse engineering” i.e. taking apart some of the key biotechnology components with relevance to agriculture and rebuilding them in a way that makes them accessible and affordable to the poorest in the community. In parallel, the program works with a bottom up approach by engaging with the selected indigenous communities to determine their needs with respect to agriculture. These activities are aimed to be mutually supportive and encompass biotechnology, informatics, anthropology and sociology to bring a multidisciplinary approach towards effective implementation of agricultural biotechnology for the disadvantaged in the country.



Record notes on post harvest practices of an indigenous community in Senggarang.



Packing samples collected from symptomatic leaves of “Pisang Abu”, “Pisang Nangka” and “Pisang Nipah”.

The program started with a number of site visits by several team members to engage with and consult Orang Asli communities in Peninsular Malaysia, both to assess the suitability of the sites for the study and the interest of each community to participate. Another important early activity was a workshop on Ethics in working with indigenous minority groups in Malaysia, held in December 2012. During this interactive workshop, Assoc. Prof Juli Edo (Department of Anthropology and Sociology, Faculty of Arts and Social Sciences, UM,) Assoc. Prof Rami Bulan and Prof Gurdial Singh (Law Faculty of Law, UM) shared their experience and advice including the “do’s and don’ts” when visiting these communities.

Ethical, legal and administrative matters to be considered for the program were discussed, resulting in all members signing an ethical conduct agreement. In February 2013, the program received official permission to conduct the program from Jabatan Kemajuan Orang Asli Malaysia (JAKOA), which was followed by a number of site visits to interview community members and to collect experimental samples of soil, microbes, plants and insects for the Ag Biotech studies. This program is aimed for completion in 2015.

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Banana plots have been sampled and DNA based methods will be used to compare the microbial ecosystems with those of commercial plantations.



Sampled banana leaves, showing disease symptoms. The same planting areas are used for the plant virus, rhizosphere and biopesticide studies.

ALEPS: An Adaptive Learning Environment for Acquiring Problem Solving Skills in Physics

By: Siti Soraya Abdul Rahman, Norisma Idris, and Nurul Fazmidar Mohd Noor

Introduction

Students at Higher Institutions (e.g. colleges, universities) face a common problem, namely the difficulty in the process of acquiring and understanding information and knowledge of the subject matter, especially in acquiring problem solving skills. The various teaching and learning aids and educational tools available still lack the capability of capturing problem solving skills, and yet, more often than not, lacked the capability of assessing students' progress in acquiring such skills. Study shows that one of the main reasons for this is due to the emphasis towards product-orientation rather than to understand the information-processing involved during the teaching and learning process. The need for research is clearly called for to design and develop educational tools that can cater for the acquisition of problem solving skills. While capturing such skills is necessary, technique for assessing students' progress in accomplishing the skills transfer is equally important.

Goal of the Study

This research proposes a computer aided learning approach known as Adaptive Learning Environment for Problem Solving (ALEPS). The fundamental principle underlying the design of ALEPS is based on Polya's problem solving model. Polya was of a firm opinion that problem solving abilities are not something human are born with, but a skill that can be acquired.

He discovered a strategy for problem solving using four principles: "Understand the problem, devise a plan, carry out the plan then look back (reflect)".

ALEPS: An overview

The system consists of several modules, which are according to Polya's problem solving model as follows:

Understanding and planning modules



The understanding module provides immediate feedback to students, assisting them in categorizing physics problems based on the concepts involved.

The module consists of a problem formatter, a feedback sub-module and a knowledge base. The problem formatter will parse physics problem statements written in English using an augmented transition network grammar. A semantic network representing this problem features and their interactions will be developed with the assistance of the knowledge base.

The feedback sub-module provides three types of hints based on the student's request: (1) pointing hint, (2) teaching hint, and (3) bottom-out hint. In the understanding stage, student is expected to identify known/unknown variable(s), object(s), and domain involved (e.g. forces in equilibrium).

The output of the understanding stage will be a proper physics problem representation based on the problem domain. The variables and domain identified in the understanding stage serve as an input to the planning module.

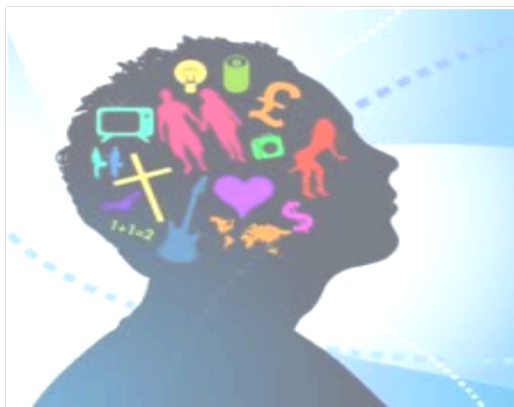
In the planning stage, a sketch of the problem is done based on the variables involved. Using the knowledge obtained from the domain identified and the sketch, the latent variables and principle involved are identified. Finally, the relevant formulas are identified based on the principle involved. At this stage, the student is allowed to search relevant worked-examples stored in the system's repository to assist them in devising their plan.

At this point, the student is allowed to search related worked-examples to assist them in checking and/or re-planning their solutions. This provides the student a rich experience to grasp the basic principles of physics and helps them in reviewing their understanding.

Executing The Plan and Checking The Solution Modules

These modules involve the development of the visualizations and the checking of the realistic occurrence of the visualizations based on the problems given. The modules will consist of a frame which will serve as an environment for simulation, a list of objects that can be dragged and dropped, and object attributes that can be modified based on the questions and solutions considered. These attributes include mass, gravity, frictional force, elastic limit, sound effects, etc. Students can drag and drop the objects on the frame and then apply the various attributes to not only see how the object will respond in the simulation environment but also how they will interact with each other. Students can decide to choose objects based on the predefined shapes available such as circle, square, polygon etc. or can import other objects in the form of images from the system's file. They can control the simulation environment by experimenting with the various object attributes available. The system allows the students to determine the interactions between the objects during the simulation stage based on basic physics principles learnt.

The modules also serve as verification for the solution. Students are able to see the working of the plan made, whether it is a realistic occurrence or not. At this stage, the student can then make adjustments to the solution plan (i.e. returning to the planning stage) in order to obtain a realistic simulation in cases where the simulation has not been achieved.



Reference

•Tom Reardon, Teaching Problem Solving Strategies in the 5 – 12 Curriculum, Reardon Problem Solving Gifts, Inc, USA, 2001.

Related Publications

- Bimba, A., Idris, N., Mahmud, R., Abdullah, R., Abdul-Rahman, S-S, Bong, C. H., *Problem Representation for Understanding Physics Problem*, Paper accepted for the 4th International Conference on Next generation Information Technology (ICNIT2013), Jeju Island, Korea, 18-20 June 2013.
- Andrew Bimba, Nurul F. Mohd Noor, Mohd Nizam Ayub, Nornazlita Husin, Hannyyzura Affal, Zeeshan Rasool, *PhyVis: Problem Solving in Physics through Visualizations*, Paper accepted for the 4th International Conference on Next generation Information Technology (ICNIT2013), Jeju Island, Korea, 18-20 June 2013.

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Halocarbons and Climate Change

By: Mohd Sahrul Mohd Nadzir and Mhd Radzi Bin Abas

Halocarbons are chemical compounds containing one or more carbon atoms bonded to one or more halogen atoms such as fluorine, iodine, bromine and chlorine.

A wide range of long and very short-lived species (VSLS) halocarbons play very significant roles in the atmosphere. These roles include production of chlorine and bromine radicals that are involved in the catalytic destruction of ozone in the stratosphere and troposphere. It has been suggested that reactive halocarbons species might provide catalytic destruction pathways for tropospheric ozone (Figure 1) (Zafirou, 1974; Chameides and Davis, 1980). Furthermore, there are evidences of halogen-catalyzed ozone destruction in the tropics, sub-tropics and mid-latitude regions (Nagao et al., 1999; Matveev et al., 2001).

Satellite Observations in the Lower Stratosphere

30 August 1996

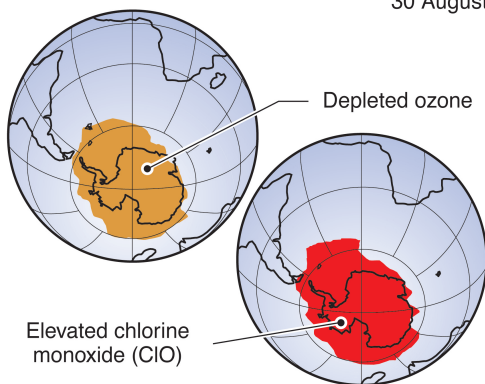


Figure 1: The formation of 'Ozone hole' in Antarctica is due to halogen monoxide (WMO 2006).

Biogenic source of halocarbons

Studies have found that many algae species, in different climate zones, are able to produce a variety of halocarbons (Giese et al., 1999). The emission of halocarbon gases from marine algae has been investigated for the first time by Moore et al. (1977).

Marine algae such as micro and macro algae could be responsible for a highly diverse assortment of very short-lived species (VSLS) metabolites. Macro algae such as seaweeds significantly contribute to the presence of these gases in the marine boundary layer especially at coastal sites.

The mechanisms behind the production of halocarbons from marine algae

The enzymes correlated with halocarbon production is known as haloperoxidase which can catalyze the oxidation of halides (bromide, iodide and chloride) by H_2O_2 , resulting in the halogenations of certain organic substrates (Reaction 5.1) or the halide-assisted disproportionation of hydrogen peroxide forming dioxygen (Reaction 5.2) as shown in Figure 3. The biological reaction of halogenations by algal haloperoxidases is thought to lead to the emission of the volatile halogenated compounds such as CH_3I , CH_3Br , CH_3Cl and CH_2Br_2 (Wever, 1988; Wever et al., 1991).

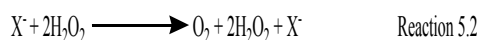


Figure 2: The oxidation of halide by H_2O_2 which is accomplished by BPO.

Halocarbon's research in Malaysia

Tropical Asian regions are believed to be important for atmospheric research due to their climatological and geographical characteristics. The tropical region has high convective activity with fast efficient uplift to the upper troposphere (Fueglistaler et al., 2008). The Maritime Continent is the most important tropical location for this rapid convective transport (Levine et al., 2008). South East Asia (SEA) is projected to be a hot spot for oceanic VSLS emissions and subsequent supply to the stratosphere.

Ground based sites-A collaboration with University of Cambridge.

Sites for ground based measurements were at Tawau, Danum, Port Dickson, Bachok, Johor and Langkawi.

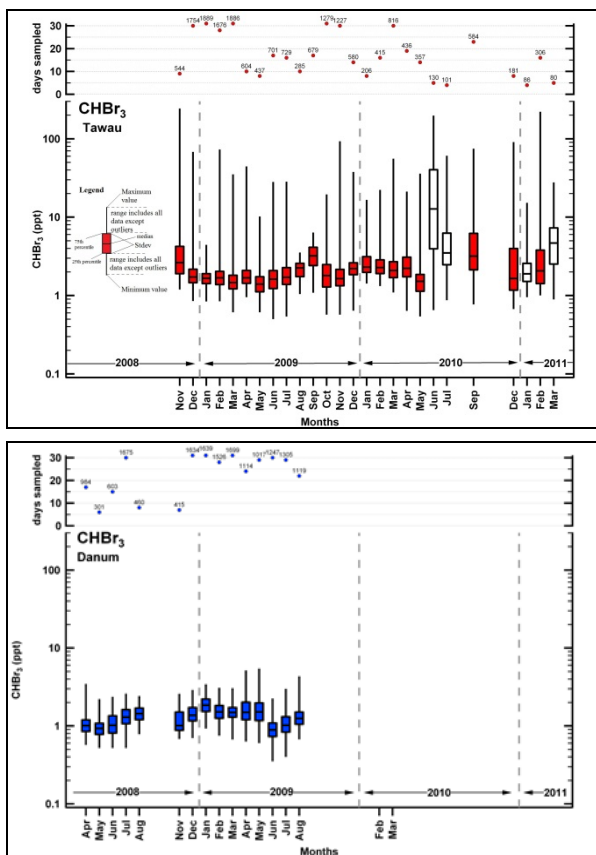


Figure 3: CHBr₃ data set from August 2008 to March 2011 for Tawau (left) and Danum (right).

Cruise measurement

Cruise measurements were made in the Straits of Malacca, South China Seas and Sulu-Sulawesi Seas within the Perdana Expedition Scientific Cruise or PESC 09. The vessel used was the KD Perantau, of the Royal Malaysian Navy (Figure 8). The cruise started from the Royal Malaysian Navy Base at Pulau Indah, Port Klang ([2°57.360' N 101°19.864 E](#)) in the Straits of Malacca, on 18th June 2009 and ended at the Royal Malaysian Navy base at Teluk Sepanggar, Kota Kinabalu ([6°10.890'N 116°10.081'E](#)) on 31st July 2009.

Conclusion

- Higher mixing ratio for CHBr₃ observed over Tawau coastal area.
- Higher mixing ratio for CHBr₃ observed at Strait of Malacca during PESC 09 and 2010 halocarbon campaign.
- Emissions of halocarbons are believed to be higher at coastal compared to open ocean due to high biological activity such as macro and micro algae bloom.
- Our study showed higher activity of haloperoxidase present in certain cell tissue, leading to higher release of halocarbons.
- In addition, the formation of VSLS has also been suggested to be linked with the photosynthetically active cortex cells of the algae. Therefore, whether enzyme activities or photosynthesis activity of the cortex cell contributes to the formation of VSLS are still unclear.

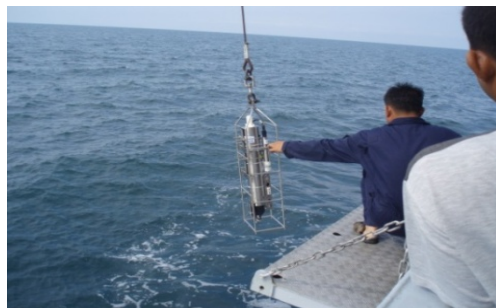


Figure 4: Water sampling



Figure 5: Air sampling

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UM Power Energy Dedicated Advanced Centre (UMPEDAC): Modified Three-phase AC/DC Converter With Cascaded Boost- SEPIC Output Stage

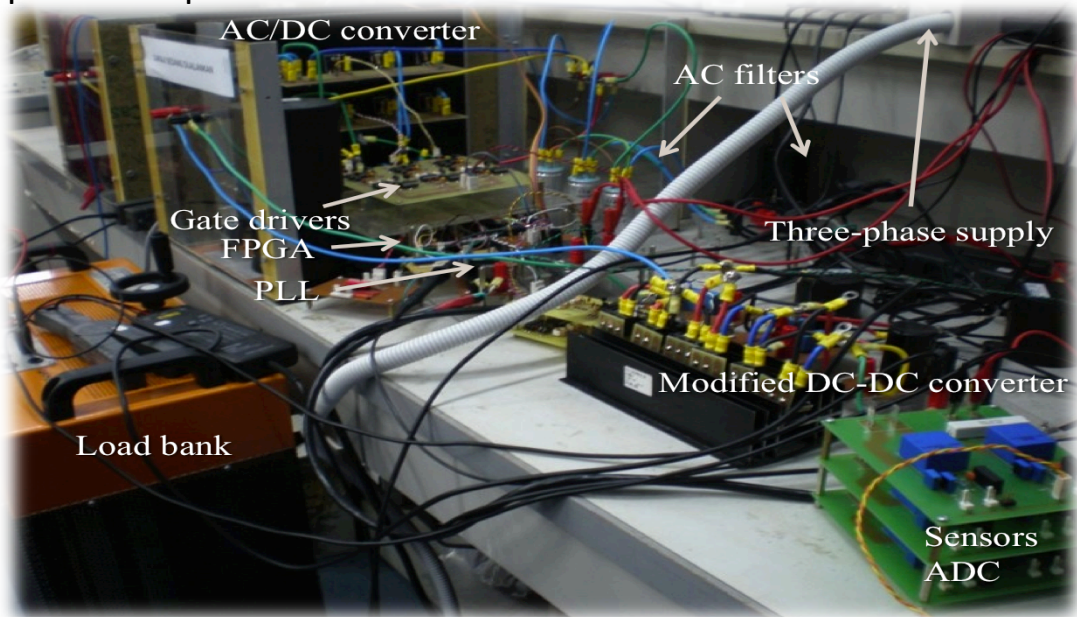
Introduction

A modified three-phase buck rectifier with cascaded boost-SEPIC converter at the output stage operates in continuous-conduction mode (CCM), and its purpose is to achieve sinusoidal input currents with low current total harmonic distortion (THD), near-unity power factor, and high DC voltage gain during low duty cycle operation. Altera field-programmable gate array (FPGA) is used to generate pulse-width modulated (PWM) control signals, and to compute Proportional-Integral-Derivative (PID) algorithm.

Objectives

- i) To develop a high DC voltage gain, low harmonic and high power factor modified three-phase buck rectifier with cascaded boost-SEPIC converter.
- ii) To analyse the performance of the proposed converter

Experimental Setup



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Photonics Research Centre University of Malaya (PRCUM): Optical Settlement Sensor

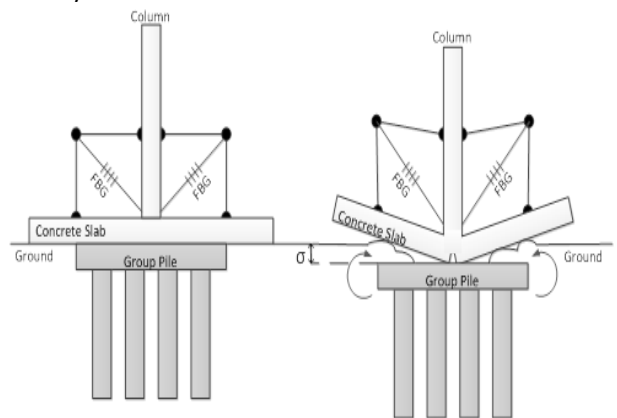
The perpetual cracks rearing on the MRR2 over-head bridges, the collapse of retaining wall in Setiawangsa on the last New Year's eve and the recent collapse of the overhead bridge in Cyberjaya have caused more than monetary casualties. These incidents have elevated the public awareness on the safety and liveability conditions of the structural design and the effectiveness of the existing structural health monitoring protocols in Malaysia. The enforcement authorities have enacted strict building standards and guidelines for constructors, but are struggling to oversee all the construction activities in the major construction projects in Malaysia due to lack of relevant expertise, human resources, and comprehensive equipment.

Fibre optic sensors (FOS) have been widely used for structure health monitoring in other countries like United States, Europe, Korea and Hong Kong. The FOS are used to measure local strain and temperature of concrete structures, to predict the health condition entire buildings or infra-structures. The key benefits of the FOS over the traditional electrical sensors are:

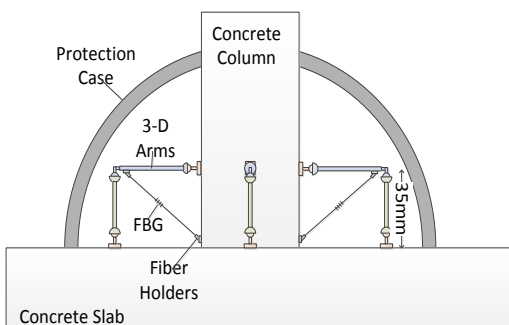
- Resistance to corrosive and humid environment
- Immune to Electromagnetic Interference (EMI)
- Applicable in high voltage or current environment
- Multiple sensors can be multiplexed on single lightweight optical fibre to reduce DAQ cabling
- Low loss or no signal degradation over long distance or off-shore remote monitoring
- Miniature and suitable for Non-Destructive Evaluation

The proposed invention, the optical settlement sensor, extends the applications of FOS to structural settlement sensing. The proposed optical settlement sensor utilises the optomechanical properties of Brag-grated optical fibres and specially engineered mechanical packaging to detect micro-movement of concrete supporting columns in new and existing buildings and infrastructures.

The measuring range and sensitivity of the sensors can be adjusted based on different structural requirements and building standards. The maximum measurable settlement varies up to 15mm, with the sensor sensitivity of 0.075 mm/reading. The proposed optical settlement sensor can be integrated into existing FOS structural health monitoring network, to provide a holistic analysis for structural condition evaluation.



Optical Settlement Sensor:
Before and After Settlement



Optical Settlement Sensor

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**PHOTONICS RESEARCH CENTRE UNIVERSITY
OF MALAYA**

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Institute of Ocean and Earth Sciences (IOES): Maritime Culture and Geopolitics Studies

By: Assoc. Prof. Dr Hanafi Hussin

Since prehistoric times, diverse communities have engaged in a variety of activities that relate to the sea. Sea-faring peoples have traversed oceans in search of new lands and resources. Resulting in migration, cross-border and international encounters. Other activities such as shipping and the creation of navies have also taken place. Today, the maritime space continues to bear witness to conflicts, negotiations and diplomacy. In the realm of culture, the sea draws inspiration, deep respect and even fear among many maritime communities, as reflected in their ceremonies, rituals, songs, dances, tales and material artifacts. Evidences of diachronic and synchronic series of events suggest that an increased awareness of the processes and results that arise from the choices and actions of maritime peoples, made in a large part through their close relationship with the sea, can facilitate the formation of a more comprehensive understanding of present-day global and regional maritime issues.

Activities and Collaborations

The unit conducts research in the fields of the humanities and social sciences that relate to the multiple dimensions of the sea as source, object and site of inquiry. It focuses on maritime history and culture, socio-economic change and development, the significance of ports, sea-oriented polities, shipping routes as well as international relations pertaining to the sea. At the initial stage, the unit concentrates primarily on the geographical space of the seas of Southeast Asia with the view of extending its areas of inquiry into other water frontiers and environments.



Seminars

- 1st International Seminar on Maritime Culture and Geopolitics, 2008
- 2nd International Seminar on Maritime Culture and Geopolitics, 2009
- 3rd International Seminar on Maritime Culture and Geopolitics, 2010
- 4th International Seminar on Maritime Culture and Geopolitics, 2011
- 5th International Seminar on Maritime Culture and Geopolitics, 2012



Photo: Security, culture and research among Bajau Laut of Sitangkai Island, Southern Philippines

Research Projects

- Mapping the Bajau: Origins, Performance and Cultural Sustainability of the Bajau Community in Sabah, Malaysia and Sulawesi, Indonesia.
- Minorities in Southeast Asia: Struggles for Political and Religio Cultural Identity.
- Environmental Changes and Impact on the Continuity of Cultural Practices: A Case Study on the Sama Bajau and Sama DiLaut in the Coastal Maritime Areas of Sabah and Southern Philippines.
- The Development of the Maritime Sector in Malaysia.

Research Collaborations

The unit of Maritime Culture and Geopolitics regularly collaborates with the Asian Center, University of the Philippines at Diliman on ongoing research projects and seminars. The unit also collaborates locally with the Sabah Museum, Malaysia, in its ongoing research on maritime communities in the East Coast of Sabah.



Photos: Culture, festival and community program

Publications

- Hanafi Hussin & Santamaria, MCM.(Eds.). (2012). *Sama Celebrations: Ritual, Music and Dance of Sama Dilaut and Sama-Bajau in Southern Philippines and North Borneo*.Kuala Lumpur: IOES, University of Malaya.
- Hanafi Hussin.(Ed.). (2010, December). *Journal of Maritime Geopolitics and Culture*, Vol. 1(1). Kuala Lumpur: IOES, University of Malaya
- Hanafi Hussin, Santamaria, MCM, Sakili, A., & Mason, P.(Eds.). (2008). *Southeast Asian Religion, Culture and Art of the Sea*. Kuala Lumpur: IOES, University of Malaya.
- Hanizah Idris, & Tan, W. H. (Eds.). (2010).*The Development of the Maritime sector in Malaysia*. Kuala Lumpur: IOES, University of Malaya.
- Hanizah Idris, Tan, W. H., & Mohammad Raduan Mohd Ariff.(Eds.). (2008). *Maritime Social and Economic Developments in Southeast Asia*.Kuala Lumpur: IOES, University of Malaya.
- Wong, T. K. D. (Ed). (2008). *Memory and Knowledge of the Sea in Southeast Asia*.Kuala Lumpur: IOES, University of Malaya.

Contact

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The Centre for Tropical Infectious Diseases Research & Education Centre (TIDREC)

University of Malaya in Kuala Lumpur, Malaysia, has identified infectious diseases as one of the most challenging issues faced by mankind. To enhance research in this area, the Tropical Infectious Diseases Research & Education Centre (TIDREC) was established in 2008 by the University of Malaya as a dedicated one-stop research centre for the advancement of knowledge in tropical infectious diseases, especially diseases that have potential impact on the global community. There are five main research programs under TIDREC; Nipah and Highly Virulent Pathogens (NiVP), Influenza and Respiratory Viruses (InORVP), Bacterial and Fungal Research (BFRP), Dengue and Arbovirus Research (DARP), and Simian Malaria and Parasitic Diseases Research. TIDREC serves as a focal point for national and international collaborative research in these main research areas.

TIDREC is located at the Department of Medical Microbiology, Faculty of Medicine, University of Malaya. Its research members comprises of experienced researchers especially in dengue and arboviruses, Nipah virus, enterovirus 71, melioidosis, HIV, mycobacterium, parasitic diseases and vaccine development. TIDREC participates in national surveillance of infectious diseases including influenza, dengue and arboviruses, diarrheal diseases and hand, foot and mouth disease (HFMD), and provides research and referral diagnostic services. TIDREC is also the reference centre for dengue and arboviruses through its WHO Collaborating Centre for Arbovirus Reference & Research (DF/DHF) and act as one of the National Influenza Centres (NIC).

As a centre dedicated also for teaching and knowledge advancement, TIDREC actively organizes trainings, workshops and seminars on infectious diseases and conduct biosafety training. TIDREC is the first research centre in the country to install fully certified modular biosafety level 2 & 3 laboratories for research involving highly virulent pathogens. At the same time, TIDREC is the only centre currently with a proper mock biosafety level three training facility. TIDREC aspires to be an internationally recognized centre of excellence in tropical infectious diseases research and education that serves the health needs of the global communities.

Contact

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The Centre for Research in Biotechnology for Agriculture (CEBAR)

The Centre for Research in Biotechnology for Agriculture (CEBAR) is a centre of research excellence at the University of Malaya with a mission to “create a platform for world class research, development, applications and training with outputs and products that interface between the fundamental and applied sciences.”

The objective of CEBAR is to strengthen, promote and synergize links with industry with a vision to bridge academic research and industry needs. The Center for Research in Biotechnology for Agriculture is both a physical and virtual centre which synergizes the considerable existing capacity and resources within the University of Malaya, targeting niche areas including phytopharming, agriculture waste bioremediation, molecular breeding and selection and molecular diagnostics of plant and animal diseases.

Core research groups in CEBAR include the Plant Biotechnology and Molecular Research Group, Agricultural Entomology Research Group, Post-Harvest Research Group, Molecular Marker and Breeding Biotechnology Research Group and Laboratory for Renewable Resources in Agriculture.

The virtual structure of the centre promotes the borderless transfer and exchange of information and resources between members, partners and local and global stakeholders of CEBAR. At its inception, CEBAR received infrastructure funds for the building of a containment facility, the **Plant Biotech Facility (PBF)** which was launched on December 1st 2009 to enable UM to remain at the forefront of transgenic plant and biosafety research and training. CEBAR **Genetics and Molecular Laboratories** are well-equipped with instruments including quantitative Real Time PCR, Genetic Analyzer, Gel Documentation and 2D Gel Systems that are made available to facilitate research for members and associate partners.

The **Plant Biotechnology Incubator Unit (PBIU)** was established to promote biotechnology and enabling technologies for agriculture. The unit advocates market and K-driven R&D to facilitate rapid technology transfer from the laboratory to industry. Technology transfer is carried out through customized training, workshops, research contracts and consultation services.



Contact

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Research Output

Research Publications based on ISI Web of Science Database

Number of Publications	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	388	422	399	499	595	1,091	1,643	2,127	2,146	902
Number of Times Cited	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	5,793	3,475	4,008	4,864	4,298	6,379	7,028	5,438	1,961	122
Citations / Publication	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	14.93	8.23	10.05	9.75	7.22	5.85	4.28	2.56	0.91	0.14
h-index	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	33	25	30	32	29	30	29	23	11	4

Research Publications based on Scopus

Number of Publications	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	457	548	611	694	960	1,364	1,888	2,502	2,649	1,356
Number of Times Cited	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	6,492	4,492	5,191	6,046	5,586	7,773	8,569	7,467	2,918	265
Citations / Publication	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	14.21	8.20	8.50	8.71	5.82	5.70	4.54	2.98	1.10	0.20
h-index	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
	37	30	32	34	30	31	31	27	12	5

* data compiled as of 1st July 2013

Source- UM Library

Research Output

UM Publications indexed in WoS according to PTj – as of 1st July 2013

AUTHOR(S) WITH UM AS AFFILIATION	NO OF ARTICLES	TOTAL (1526)
FACULTY OF SCIENCE	754	31.14%
FACULTY OF MEDICINE	586	24.20%
FACULTY OF ENGINEERING	526	21.73%
PHOTONIC RESEARCH CENTRE	79	3.26%
FACULTY OF DENTISTRY	73	3.02%
FACULTY OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY	63	2.60%
POWER ENERGY DEDICATED ADVANCED CENTRE (UMPEDAC)	46	1.90%
FACULTY OF ECONOMICS & ADMINISTRATION	39	1.61%
FACULTY OF BUSINESS & ACCOUNTANCY	37	1.53%
FACULTY OF ARTS & SOCIAL SCIENCES	36	1.49%
INSTITUTE OF OCEAN & EARTH SCIENCES (IOES)	23	0.95%
CENTRE FOR FOUNDATION STUDIES IN SCIENCE	21	0.87%
FACULTY OF EDUCATION	19	0.78%
INSTITUTE OF GRADUATE STUDIES	18	0.74%
FACULTY OF LANGUAGES & LINGUISTICS	16	0.66%
CENTRE FOR RESEARCH IN NANOTECHNOLOGY & CATALYSIS (NANOCAT)	15	0.62%
SPORTS CENTRE	13	0.54%
FACULTY OF THE BUILT ENVIRONMENT	12	0.50%
ASIA-EUROPE INSTITUTE	6	0.25%
ACADEMY OF ISLAMIC STUDIES	5	0.21%
RESEARCH FELLOW	5	0.21%
UNIT ENHANCEMENT ACAD PERFORMANCE (ULPA)	5	0.21%
FACULTY OF LAW	4	0.17%
INSTITUTE OF CHINA STUDIES	4	0.17%
CENTER FOR MALAYSIAN INDIGENOUS STUDIES (CMIS)	4	0.17%
CENTRE FOR CIVILISATIONAL DIALOGUE	2	0.08%
NATIONAL ANTARCTICA RESEARCH CENTRE (NARC)	2	0.08%
ACADEMY OF MALAY STUDIES	2	0.08%
INSTITUTE OF EDUCATIONAL STUDIES	2	0.08%
INPUMA	2	0.08%
CULTURAL CENTRE	1	0.04%
LIBRARY	1	0.04%
SKET	0	0.00%
TOTAL	2421	100.00%

*Publications refer to : journal articles, review articles

Excluding 8 papers published in MOHE's banned journals

** Total Publication : 2138; 287 Publications co-authored from more than 1 PTj

Source- UM Library

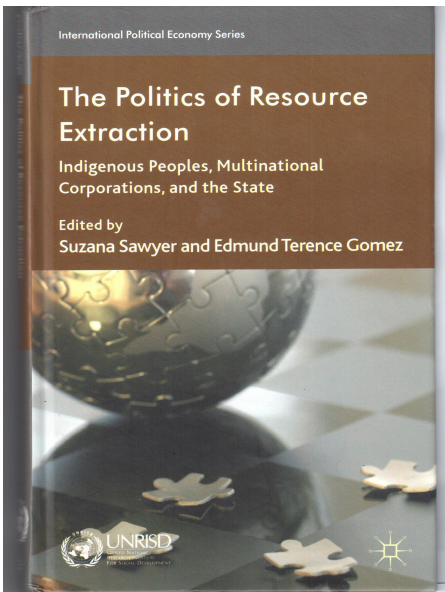


Mastering Research Methods

Author : Chua Yan Piau

Synopsis:

Mastering Research Methods is a practical guide that covers all aspects of research methodology. It is a useful teaching and learning tool for courses related to research at both undergraduate and postgraduate levels. This book can also be used as a reference by researchers when they are conducting and reporting their research. Concepts are explained in detail with examples to enable readers to carry out confidently each stage of the research process. Exercises are provided at the end of each chapter to help readers reinforce their understanding of the topics covered in the chapter.

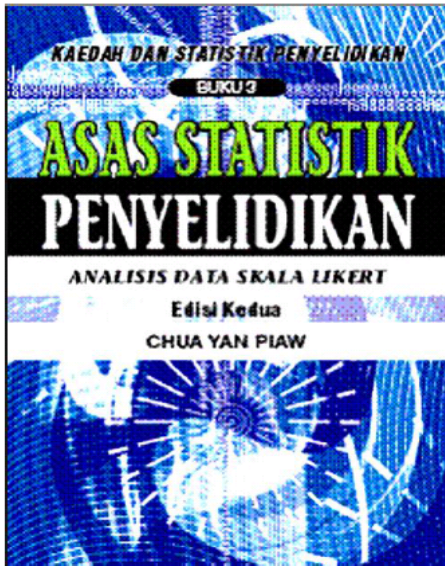


The Politics of Resource Extraction

Author : Edmund Terence Gomez

Synopsis:

International institutions, including the United Nations and World Bank, and numerous multinational companies (MNCs) have voiced concern over the adverse impact of resource extraction activities on the livelihood of indigenous communities. Yet the scale and scope of problems confronting indigenous peoples caused by mineral extraction projects endorsed by governments, international agencies and MNCs is monumental. This raises a paradox: Despite the burgeoning number of international charters and national laws asserting the rights of indigenous peoples, they find themselves subjected to discrimination, dispossession and racism. The authors explore this paradox by examining mega resource extraction projects in Australia, Bolivia, Canada, Chad and Cameroon, India, Nigeria, Peru and the Philippines.

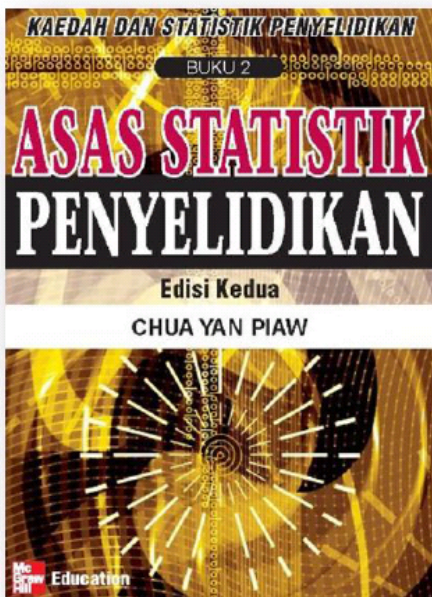


Asas Statistik Penyelidikan

Author : Chua Yan Piau

Synopsis:

Buku Asas Statistik Penyelidikan - Analisis Data Skala Ordinal dan Skala Nominal ini merupakan buku yang ke-3 dalam siri buku Kaedah dan Statistik Penyelidikan. Buku ini mengandungi 11 bab yang berkaitan dengan skala pengukuran dan ujian statistik, persediaan data dan transformasi data kajian untuk program SPSS, dan analisis skala ordinal seperti ujian Mann-Whitney U, ujian Wilcoxon T, ujian Kruskal-Wallis H, ujian Friedman, dan ujian korelasi Spearman. Selain itu, analisis data skala nominal atau analisis data dalam jadual kontingensi dan ujian korelasi Cramer V juga dimuatkan dalam buku ini. Penghuraian konsep dilakukan secara mendalam dengan menggunakan contoh kajian dalam konteks tempatan. Latihan di akhir setiap bab dapat mengukuhkan kefahaman pembaca. Secara ringkas, buku ini ditulis untuk membantu pembaca memahami, menghayati serta melaksanakan penyelidikan dengan yakin.



Asas Statistik Penyelidikan

Author : Chua Yan Piau

Synopsis:

Siri buku Kaedah dan Statistik Penyelidikan ini sesuai digunakan oleh mereka yang terlibat secara terus dengan penyelidikan. Kandungannya yang meliputi semua aspek penyelidikan, sesuai dijadikan bahan pengajaran dan pembelajaran bagi kursus-kursus yang berkaitan dengan reka bentuk dan statistik penyelidikan untuk peringkat pengajian ijazah asas dan ijazah lanjutan. Buku ini memuatkan 12 bab yang membincangkan Statistik Deskriptif, Statistik Inferensi Dan Ujian Signifikan, Analisis Data Untuk Penyelidikan Kualitatif, Persediaan Data Untuk Program SPSS, Statistik Kebolehpercayaan Instrumen Kajian, Ujian Khi Kuasa Dua, Ujian T, Ujian ANOVA, Ujian Korelasi, Regresi Pelbagai, Analisis Bagi Item Pelbagai Jawapan dan Melaporkan Hasil Analisis Data Kuantitatif Berdasarkan Format APA. Penggunaan bahasa yang ringkas dan penulisan yang mudah difahami membantu pembaca menghayati serta melaksanakan penyelidikan dengan lebih yakin.

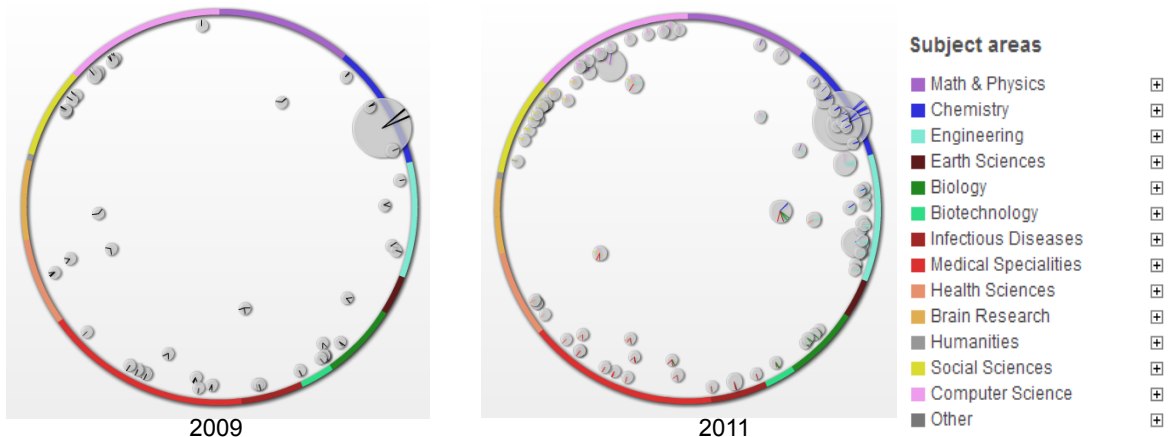
Informing University of Malaya's Research Strategy with Research Analytics

By: Janet Chiew, SciVal Consultant, Asia Pacific, Elsevier

Working with universities and government agencies as a product consultant for Elsevier, I have often been asked how our databases can better track research activities, and more importantly, uncover insights that can influence their research strategy.

It starts with a solid foundation. As the world's largest publication and abstract database, Elsevier's Scopus® has the key data bibliometricians need to map research activities and outcomes worldwide. Four years ago, researchers Kevin Boyack and Richard Klavans decided to harness Scopus as part of their research, resulting in the creation of an analytic tool that uses co-citation to map authors' citation networks. This research marked the birth of Elsevier's SciVal® Spotlight, which University Malaya (UM) recently acquired as a research analytical and benchmarking tool.

Figure 1: University of Malaya Competencies Visualized With SciVal Spotlight – 2009 and 2011



A comparison of the 2009 and 2011 map shows the dramatic growth in UM's global research impact. The 2011 map on the right shows the distribution of 87 subject areas or competencies, compared with 41 competencies on the 2009 map. In addition to the growth and continued outstanding research in Medical Specialities, we see significant increase in research competencies for subjects such as Engineering, Computer Science, Chemistry, and Social Sciences.

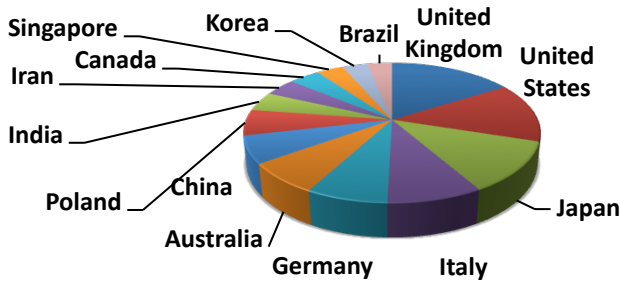
Highest International Collaboration Rate Amongst Malaysia's Public Universities

International collaboration rates are being measured more frequently to understand the breadth and influence of an institution's research. As one of the most established research universities in Malaysia, it is no surprise that UM has the highest international collaboration rate of any Malaysian university (34% from 2007–2011).

Collaboration is highest with UK researchers (1,019 articles co-authored), followed by the United States, Japan and Italy. Figure 2 shows the distribution of internationally co-authored articles.

Top international collaborating institutions of UM are: National University of Singapore, King Abdul Aziz University, University of Oxford, University College London and Imperial College London. Each university collaborates with UM in different subject areas.

Figure 2 : Top Collaborating Countries
(based on no. of co-authored articles with UM)

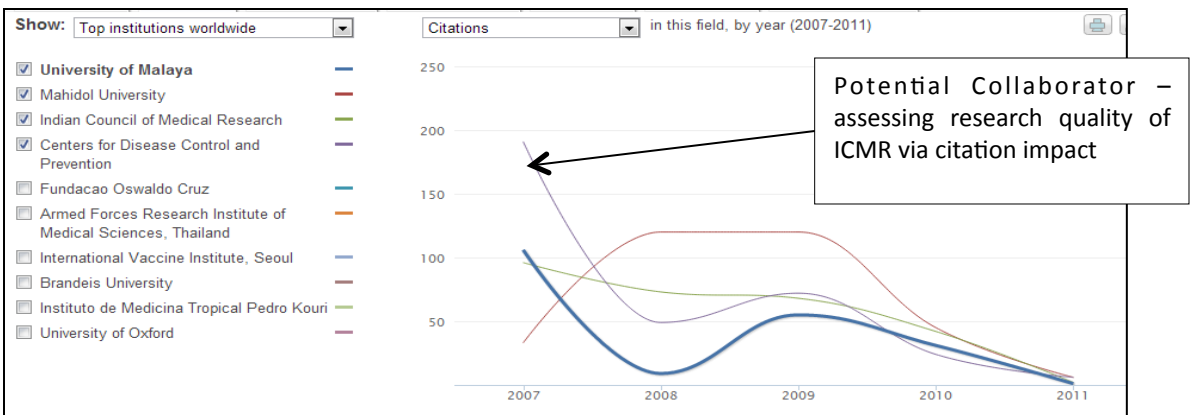


Seeking Collaboration Strategically

After mapping UM's publications in the context of the global research landscape and thus understanding its research strengths, the next step is to identify the best collaborators from within or outside UM's existing researcher network.

To illustrate this potential for identifying collaborators, it is interesting to use an example such as Infectious Diseases. UM has a competency in Dengue virus and infection (identified as EC#29 in SciVal Spotlight), which is a growing field worldwide. UM produces the most number of articles in this particular area, followed by Mahidol University and the Indian Council of Medical Research (ICMR). Through SciVal Spotlight's analysis, we see there is already collaboration with Mahidol in this area, but not with ICMR. SciVal Spotlight analyses show that ICMR's articles have a higher citation per article of 10.0, and that there are 12 contributing authors from ICMR in this field. Detail on the authors' publications and *h*-indices are also provided.

Figure 3: Potential collaborators in Dengue virus and infection



The Information Is Out There

As Arthur Conan Doyle's famous creation detective Sherlock Holmes said, "It is a capital mistake to theorize before one has data". These words have never rung more true than in today's complex and competitive global research scene. But the data and tools are at hand.

SciVal Spotlight combines the power of a global database of 49 million publication records and superior analytic and visualization tools to provide insight into UM's research capabilities. With the ability to filter by subject area, search by author and keywords, and view a global map of collaborating institutions, UM can use these insights to craft a research strategy that further propels the university forward in its delivery of research excellence.

RESEARCHER ID

By: Janaki Sinnasamy, Koh Ai Peng

Researcher ID is applicable to Thomson Reuter's products inclusive of Web of Science and EndNote. Once a researcher has signed up for the Researcher ID, it enables him/her to build a profile of the scholarly works whether the paper is published in Web of Science or elsewhere. Citation metrics, however, can only be viewed for papers published in Web of Science. Most importantly, it totally avoids misidentification of names of researchers. Researcher ID is a unique author identifier which can resolve author misidentification. Some common examples of misidentification of names of academics in the University of Malaya are shown below in Table 1.

Goh K. L.	It can misidentified as Goh Khean Lee or Goh Kim Leng
Adeeba Kamarulzaman	Can be Adeeba, K. or Kamarulzaman, A.
Hashim, R.	Can be Rauzah Hashim, Roslan Hashim, Rosli Hashim
V.G.Kumar Das	Variations include Das, V.G.K. , Kumardas, V.G.
Mary Anne Tan Jin Ai	The name is indexed in multiple ways: Tan, J.A.M.A , Tan, J.A., Tan, M.J.A., Tan, J., Tan, M.A.J.A., Tan, J.M., Ai, M.A.T.J., Anne, T.J.A.M.
Mhd Radzi Bin Abas	Bin Abas, M.R., Binabas, M.R. , Abas, M.R.
A. Hamid A Hadi.	Hadi, A..H.A., Hadi, H.A., Hadi, A., Hadi, A.H.B.A., Hadi, H.B.A., Hadi, H.

Table 1: Examples of confusion of names and abbreviations

The examples given above are taken from the Web of Science with the use of the affiliation phrase 'Univ Malaya'. Imagine if the article does not include the institution's affiliation! It can become a gregarious task to untangle our academics and researchers among the multitude of authors! In view of this, there is a dire need to establish unique author identification for each academic/researcher. The benefits of creating a unique identification are as follows:

- With a unique author ID, traceability of publications and citations of the respective individual is easy and accurate. It will go a long way to ensure there is no mistaken identity
- Helps to promote research publications of the individual
- Be identified as the correct researcher paving the way for collaboration opportunities
- Create a publication list from databases identifying only the specified individual's work
- Able to manage personal profile of saved searches with flexibility and minimum maintenance
- Able to generate accurate personal citation metrics to promote scholarly contributions such as : h-index, Citation distribution per year, Total times cited count, and Average times counted.

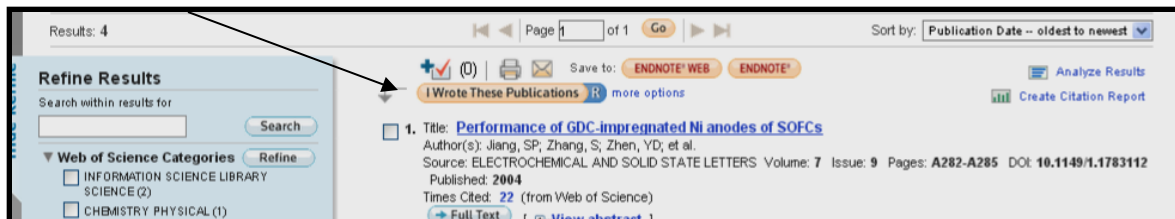
HOW TO ESTABLISH RESEARCHER ID

It is absolutely necessary to sign in for a user account with the Web of Science before one can proceed to establish Researcher ID. This user account can also help you to set up a personalized file to save your search history and articles viewed.

All about Publishing

1

Sign in if you already have a user account for Web of Science or Researcher ID. Otherwise, register for a new account. Once signed in, search for your papers published in Web of Science. Identify and mark papers written by you and verify by clicking on “I wrote these publications”. Then, send the list marked to Researcher ID.



2

Return to the main page. To view the publications moved to your Researcher ID, Click on “My ResearcherID” and view ‘My Publications’.

3

Much information is available at “My Publications”. You can view citation metrics such as ‘times cited’, and information on citing articles. Other valuable information on collaboration with authors, research areas, countries and institutions can also be obtained.

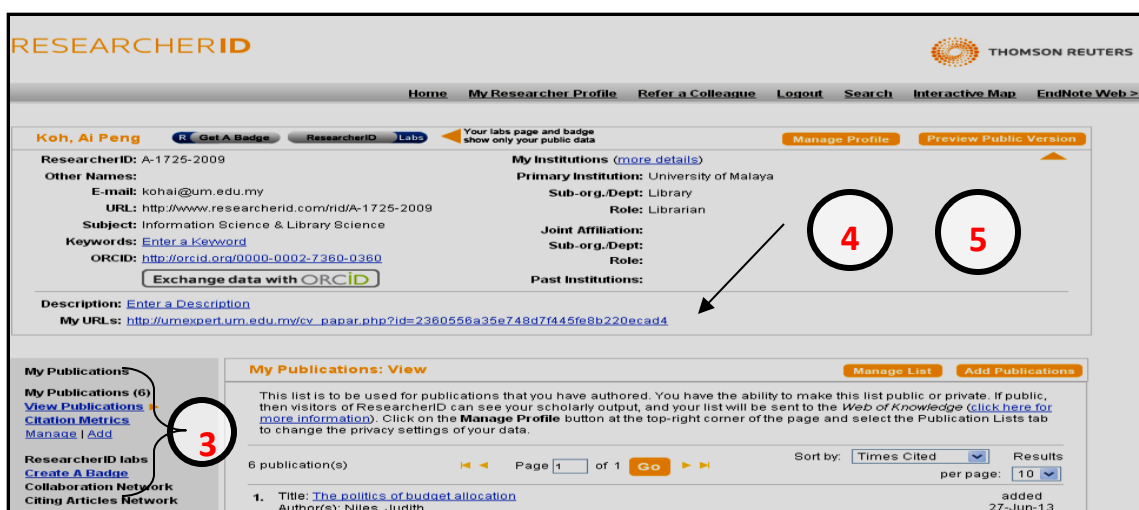
4

“Manage List” allows you to check your publications and edit or delete if necessary

5

This is the most interesting part of Researcher ID. Papers published in non-ISI journals such as Scopus, PubMed, local journals, etc can be added to your list of publications in Researcher ID. It is a good way to showcase your papers to the public. Visibility is enhanced here especially if the non-ISI papers have abstracts or DOI links. The other value added feature of Researcher ID is that it can be linked to other URLs such as our UM expert, personal blogs, etc.

NOTE: Adding publications to your ResearcherID is only possible through ENDNOTE or other bibliographic softwares. This means that all your papers must be stored in any one of the bibliographic softwares before they can be uploaded into ResearcherID. If you are using EndNote, select the papers you want to upload and save as output style “RefMan (RIS) Export” before the papers can be uploaded.



It is also important to ‘Manage List’ each time papers are uploaded into Researcher ID. This is to ensure there are no duplicates in the list or a case of mistaken identity.

First Malaysian to get IAS grant

By HANA NAZ HARUN AND EMILIA GAZALI | news@nst.com.my

RESEARCH FELLOWSHIP: Researcher gets RM240,000 to study spread of HIV among men

KUALA LUMPUR: Dr. Howie Lim Sin How of Universiti Malaya's Centre of Excellence for Research in AIDS (Ceria) has become the first Malaysian to be granted the prestigious IAS-NIDA research fellowship.

The research fellowship is co-sponsored by the National Institute on Drug Abuse (Nida), part of the United States' National Institutes of Health and the International AIDS Society (IAS).

The grant was presented to Lim, 36, by IAS president and Nobel laureate for the co-discovery of the HIV virus, Françoise Barré-Sinoussi, at the 7th IAS Conference on HIV Pathogenesis, Treatment and Prevention, at the Kuala Lumpur Convention Centre, yesterday.

It awarded Lim US\$75,000 (RM240,000) to pursue his research project.

Since 2009, the research fellowship has been awarded to junior scientists for 18 months of post-doctoral training and to well-established HIV or drug use researchers for eight months of professional development training.

This year, the research fellowship grant will also be awarded to two Vietnamese and a Ugandan.

Lim's project employs innovative technology to collect behavioural data to better understand the rapport between substance use and sexual risk behaviour.

The winning research, titled "Concurrency of substance use and sexual risk behaviour among men who have sex with men (MSM) in Malaysia" will see him undergo a six-month mentorship programme with Yale University in the US.



Dr Howie Lim Sin How with a copy of his research fellowship

Lim said he was happy and honoured to received the grant.

"I am still overwhelmed. This is a huge breakthrough for my research and I hope this will inspire others to do more."

Lim, who has a PhD in Epidemiology from the University of Pittsburgh, Pennsylvania, is among the few local experts on MSM and its risks.

"I will use this opportunity to further understand the factors contributing to the spread of HIV/AIDS infection among men, who are at higher risk of being carriers of the virus.

"The scope of my study will focus on the transmission of HIV/AIDS through MSM, where there are higher probabilities of them contracting the virus, aside from looking at the development of the relationship."

Lim's previous research was published in the British Medical Journal two weeks ago.

Read more: First Malaysian to get IAS grant - General-New Straits Times
<http://www.nst.com.my/nation/general/first-malaysian-to-get-ias-grant->

Source-News Straits Times- 03 July 2013

UM CENTRE OF INNOVATION & COMERCIALIZATION: **TECHNOPRENEUR PROGRAMME (TP)** – MAKING UM SPIN OF COMPANIES A REALITY

Technopreneur Programme (TP) was started in 2009 with its main objective to spur and elevate commercialization activities among UM academicians and researchers. The TP programme is a platform that enables a lecturer or UM staff to be a researcher and businessman at the same time. To date there are 11 spinoff companies that have successfully been formed.

1. Programme objectives

- To encourage academic staff of UM to be involved in entrepreneurship.
- To nurture business-minded applicants and to increase the commercialization activities of IP resulting from UM's research
- To design an investment grant scheme to encourage, develop and nurture innovative and competitive entrepreneurs
- To generate profit and revenue for UM through.

2. Programme Structure-Technopreneur Program (Private Limited Companies– Sdn. Bhd.)

- Open to academic staff/researchers of UM
- Initial fund of RM50,000 as start-up capital (if there is any fund provided by UM's management)
- Participation of at least (2) UM academic staff
- Initial Liability and Equity shareholding (UM – 70% : Researchers – 30%)

3. General Eligibility Criteria

- Malaysian (must be permanent staff to be appointed Company Director).
- Lecturer/Researcher of UM (for Sdn Bhd companies)
- Application for intellectual properties registration under UM has been made.
- Recipient of Research & Development Grant i.e., Techno Fund/Cradle/PRGS.
- Ready for full pledged commercialization.

4. Application – Required documents

- Completed **Three (3) copies** of *Technopreneur Program Application Form*, together with the requested attachments based on the checklist and a Cover Letter.
- Detailed project proposal or business plan which includes the following:

- Project Description – product line, type of services, production process, current and future R&D programs, technology partners, location of business and facilities;
- Technology and Intellectual Property – type of technology to be used and IP involved.
- Management Team – brief CV of each member
- Market Structure – review of market conditions of the proposed business and competitors;
- Commercial Potential – target market analysis and feasibility study; and
- 5 years financial projection – Profit & Loss, Cash Flow, Balance Sheet and Summary Sheet for grant drawdown.

5. Approval

Completed application forms will be processed and evaluated by the Program Coordinator within 2 weeks. Applicants shall be called to present their Business Plan/Proposal and details of their project to the '*Jawatankuasa Penilai Pengkomersilan*'. UMCIC has scheduled 3-4 evaluation cycle in a year. The Committee shall consider the viability of the proposals. The primary factor taken into account in the evaluation process is the potential of the proposed IP to be commercialized.

For successful applicants, further negotiations will be held to discuss the terms and conditions with regards to the Technopreneur Programme. Applicants are required to enter into a written agreements with UM as follows:

- Researcher Agreement – outlining the Intellectual Property Policy of UM
- Shareholders Agreement – outlining the division of shareholding and terms related to the incorporation and operation of company.

Upon approval, a company shall be incorporated by UMCIC. The directors shall be determined and appointed by UM. Process of incorporation of company will be within 2 weeks upon the completion of all required documents.

List of products by UM spinoff companies

UML-V1

COMPUTER NUMERICAL CONTROL (CNC) LATHE MACHINE



THE 1st CNC IN MALAYSIA CHOSEN BY EXPERTS

Robust and user friendly machine to produce better quality brake rotor, piston and gear for your car.

UMCIC  

MEDCOM



TOTAL OPERATING ROOM SOLUTION

The real digital operating room with specifically developed hardware and software system that allows the digital integration of operating room processes leading to seamless management of all data related to patients undergoing surgery or other interventional procedures.

UMCIC  CBMTI 

BIOPRO DIESEL™



SAFE FUEL SAFE ENVIRONMENT

- Super clean fuel
- Green fuel process
- Environmental friendly
- Waste water Palm Oil Mill Effluent (POME)

UMCIC  SYRUS TECH SDN. BHD. 

SPOKOJAN®



INNOVATION FOR A BETTER TOMORROW

- An innovative Malaysian Mosquito Attractant (MMA)
- Attracts, traps and kills adult mosquitoes
- A plant based "semiochemical" mosquito barrier system for outdoor vector control



UMCIC  SEMIOTECH 

HAMIN



ROBUST NATURAL BASE

- Halal pharmaceutical and cosmetics base
- Formulated from palm oil
- Clinically tested and safe



UMCIC  oleo pharma 

GETRID



GREEN INNOVATION

- Natural biodegradable-steroid
- Safe and non-toxic
- Effectively exterminate insects, cockroaches and lizards



UMCIC  NanoBio 

OPTICAL PLANAR SPLITTER



OPTIMAL EFFICIENCY AND EXCELLENT PERFORMANCE

- Fibre-To-The Home (FTTH) application
- Compact and compatible with FTTH and FTTB infrastructures
- Wide range of operating wavelengths
- Low insertion loss and PDL
- High uniformity



UMCIC  MUOS 

Please contact UMCIC office if you are interested to form a new spinoff company under Technopreneur.

UMCIC can be reached at 03-7967 7022 ext 2313/ 03-79677351.

IPPP RESEARCH LAB FACILITIES

NO	FACILITIES	MODEL	RATE (RM)			
			UM User		Non-UM User	
1	Nuclear Magnetic Resonance (NMR)	Jeol Jnm-gsx 270	30.00		60.00	
2	SEM (Sample Preparation)		30.00 (Material sample) 50.00 (Biological Sample)		60.00 (Material sample) 100.00 (Biological Sample)	
3	GCMS	Agilent Technologies	25.00/sample		50.00/sample	
			500.00/year*			
4	Confocal Laser Microscope	Leica Tcs Sp5 li	60.00/hour		100.00/hour	
			500.00/year*			
5	Field Emission Scanning Electron Microscope (FESEM)	Quanta FEG 450, EDX- OXFORD	High/ Low Vacuum	ESEM/WetStem	High/ Low Vacuum	ESEM/WetStem
			180.00/sample (max 5 images)	250.00/sample (max 5 images)	360.00/sample (max 5 images)	500.00/sample (max 5 images)
			EDX	EDX	EDX	EDX
			Elemental: 100.00/sample	Elemental: 100.00/sample	Elemental: 200.00/sample	Elemental: 200.00/sample
			Mapping: 100.00/sample	Mapping: 100.00/sample	Mapping: 200.00/sample	Mapping: 200.00/sample
6	Surface Area Analyzer (BET)	Micromeritics ASAP2020, TRISTAR II 3020 Kr	150.00/sample		300.00/sample	
7	Differential Scanning Calorimeter (DSC)	Perkin Elmer (Dsc-8000)	150.00/sample		300.00/sample	
8	Simultaneous Thermal Analyzer (STA)	Perkin Elmer (Sta 6000)	150.00/sample		300.00/sample	
9	Particle Image Velocimetry (PIV)	Dantec Dynamics Nano L135-15piv	From 50.00/experiment (Depend on experiment requirement)		From 100.00/experiment (Depend on experiment requirement)	
10	DNA Sequencer	Applied Biosystems (3730xl DNA Analyzer)	12.00/reaction		24.00/reaction	
11	Real Time PCR	Applied Biosystems Quantstudio (12k Flex Real Time PCR System)	30.00/hour		60.00/hour	
12	Dynamic Mechanical Analyzer	Perkin Elmer	100.00/sample		200.00/sample	

Contact

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